SAE Journal Index

Volume 71, January to December, 1963

Articles here indexed are classified and listed only by the headlines under which they were abridged in SAE Journal.

Abbreviations Used:

January, Jan	April, Ap	July, July	October, Oct
February, Fe	May, May	August, Aug	November, Nov
March, Mr	June, June	September, Se	December, Dec

Numbers after abbreviation of month refer to page numbers.

A

ABLATIVE MATERIALS — see Thermal Protection at High Speed

ACCESSORIES & EQUIPMENT — AIRCRAFT
"Cool" lights or hot cabins — SST alternates ..... July 33
Electrical interference must be designed out of transport aircraft ..... June 54
Electroluminescent lamps improve aircraft instrument lighting ..... May 78
High-performance inlets for high Mach numbers ..... Mr 74
Honeycomb tailpipe saves weight in C-141 ..... Dec 83
Rain repellent boosts 727 visibility ..... Oct 68
Supersonic transport performance boosted ..... Fe 42

ACCIDENT & ACCIDENT PREVENTION
Strength set for door latches ..... Jan 72

ACCIDENTS & ACCIDENT PREVENTION — AIRCRAFT
Aircraft arresting systems can benefit commercial aviation ..... June 40
Development continues of airborne anticollision devices .. Aug 71

ACCIDENTS & ACCIDENT PREVENTION — GROUND VEHICLE
Children's seat belt design practices recommended in new SAE J842 ..... Aug 29
New crash test aids vehicle design ..... Ap 75
1964 passenger-car engineering trends ..... Nov 30

ADDITIVES, OIL
Lube effects vary in clutch lining friction performance .. Ap 134

ADHESIVES
Key to successful adhesive bonding of truck bodies ..... Fe 75
New easy-bonding adhesives retain toughness at −400 F... May 38
SAE introduces recommended practice for testing bonding quality of bonded brake shoes ..... Aug 47

AIR CARGO
Air cargo seeks more standards, improved equipment ..... Fe 60
Standardized containers will meet major air cargo need .. Aug 90

AIR CONDITIONING & REFRIGERATION
1964 passenger-car engineering trends ..... Nov 30

AIR POLLUTION — see Crankcase Emission Control Systems

AIR POLLUTION — see Exhaust Systems & Gases

AIR TRANSPORT
Airlines need new order of reliability — a major airline V. P. tells how to get it ..... June 42

AIRCRAFT DESIGN & PERFORMANCE
727 — Boeing's most reliable jet ..... Dec 52
Charts speed preliminary design of airframe structures subject to acoustic stresses ..... July 55
Supersonic transport performance boosted ..... Fe 42
The supersonic transport — an international airline takes a look ..... June 30

AIRCRAFT FLIGHT CONTROL
Future flight controls: hydraulic or mechanical? ..... Dec 92
6–10 gyroscompasses needed for control of big missiles .. May 84

AIRCRAFT LANDING GEAR — see Landing Gear, Aircraft

AIRCRAFT, PERSONAL & EXECUTIVES
First fiberglass plane design ..... Mr 72

AIRCRAFT MAINTENANCE
How to cut cost of aircraft maintenance ..... Dec 84

AIRCRAFT, ROTATING-WING
Helicopter commuting ahead for masses in SF bay area ....Ap 81
Hot-cycle compound helicopter design has novel features .. Dec 36
What makes a jet-flap helicopter rotor stable ..... Ap 50

AIRCRAFT, VTOL & STOL
Army specifies aircraft instrumentation needs ..... July 99
Electrical controls feasible for lift engines of VTOL craft . July 91
Single-engine can meet subsonic cruise conditions ..... Fe 131
Small liftjet designed for multi-unit use in VTOLs .... June 107
Thrust ratio effects calculated for lift-engine installation requirements ..... Ap 133
Turboduct prop advantageous for 0 to 0.06 Mach aircraft .. Mr 88
VTOL air bus slated for short hauls ..... Oct 104

AIRPORTS & AIRWAYS
Air cargo seeks more standards, improved equipment .... Fe 60
Autonetics studies airborne blind landing system ..... Nov 94
Development continues of airborne anticollision devices .. Aug 71

ALUMINUM & ALLOYS
Aluminum alloys OK for Mach 2.5 ..... Dec 42
Aluminum trim resists corrosion ..... June 109
Direct operating costs of airlines ..... Dec 59
Improving corrosion resistance of exterior trim ..... Fe 58

AVIATION, MILITARY
ASW weapons improve . . . but submarine performance improves too .....Jan 64

AXLES
New procedure simplifies axle noise evaluation ..... July 68
Powered-axle concept gives army mobile, multipurpose vehicles ..... May 90
Why farm tractors go four-wheel drive ..... Se 60

B

BATTERIES
Application determines best method of energy storage .. July 123
Chevrolet cranks hot and cold engines . . . to determine starting system requirements ..... Dec 79
Troubleshooting a-c charging systems ..... Aug 84

BEARINGS
Look for trouble when engine parts get too hot ..... Ap 93
New bearing handles heavy loads with precision ..... Dec 90
Tractor design problems met ..... Jan 97

BOATS
ASW weapons improve . . . but submarine performance improves too ..... Jan 64
Reversible reduction gear for multiple marine diesels .. Jan 102
Unmanned vehicles conceived for underwater exploration .. Ap 66

BODIES
100 Avanti body parts produced from molded fiberglass .. Oct 66
Body engineering from Model T to T-Bird ..... May 48
Fewer parts, greater strength, less weight achieved with Rambler "uniside" construction ..... May 90
Improving corrosion resistance of exterior trim ..... Fe 58
Key to successful adhesive bonding of truck bodies ..... Fe 75
New metal-plastic laminate promises cheaper, lighter body panels ..... Nov 98
1964 passenger-car engineering trends ..... Nov 30
Streamlining bodies will pay dividends ..... Mr 78
Strength set for door latches ..... Jan 72
Three steps to arrest body and molding corrosion ..... July 34
Two of new Riviera design features ..... July 122
Where automotive engineers sit with urethane foam ..... Oct 63

BRAKES & RETARDERS
A car engineer inspects state vehicle inspection techniques June 75
Design and chemistry lift brake performance ..... Fe 73
Design-significant inspection regulations getting tighter .. Aug 54
New formula predicts downhill braking ..... June 51
1964 passenger-car engineering trends ..... Nov 30
Powder metal brake linings eliminate fade, engineers say — June 44
SAE introduces recommended practice for testing bonding quality of bonded brake shoes ..... Aug 47
What it takes to adapt Caliper disc brakes to American cars ..... June 33

C

CAMS & CAMSHAFTS — see Valves & valve mechanisms

CARBURETORS & CARBURETION
Engine modifications almost halve hydrocarbon and CO exhaust content, Chrysler studies indicate ..... Ap 84
Fuel injection vs carburetion — pros and cons ..... July 129
Fuel system cleanliness improved ..... Mr 69

CASTINGS
Army needs higher strength steel castings for future .... May 98
Design and chemistry lift brake performance ..... Fe 73
Design rather than discontinuities determine steel casting performance ..... June 56
Designer aids to satisfactory high-strength, thin-wall, gray iron castings ..... May 70
Metal casting advances cited ..... Jan 135
Shaw process permits precision casting of press tools and forging dies ..... June 96

CERAMICS & CERMETS
Metal-fiber-reinforced ceramics extend tensile-loading capabilities ..... Fe 80
Tomorrow's better materials ..... Fe 26

CLEAN ROOMS
Regular checks help keep clean room clean ..... Nov 57

CLEANING
Cleanliness requirements for hydraulic fluids become unrealistic ..... Mr 88
Cryogenic tank is hard to clean ..... Fe 129
Detergent cleaning best for thin film remover, tests show .. Dec 91

CLUTCHES
8 facts needed as basis for clutch design ..... Fe 64
How to design dry-type clutches ..... Mr 45
How to design electromagnetic single-plate dry-type and mechanically actuated wet-type clutches ..... Ap 76
How to design multi-disc clutches ..... May 73
Modulated clutch between engine and torque converter features new twin disc design ..... Se 42

COLD-WEATHER OPERATION
18 aids to subzero starting of diesels ..... June 107
Army studies fuels under artic conditions ..... May 94
Intake manifold torch helps "cold-start" diesels ..... June 132

COMBUSTION, ABNORMAL
Engine noise reduction gives more mechanical octanes .. May 89
Fast burn makes engines rough — in 1963 as in 1920's .. May 67
High temperatures trigger preignition ..... Dec 86
Low-ash oils help against runaway surface ignition .... Jan 101
Studies give rise to new knock theory ..... Ap 43

COMPRESSORS
Application determines best method of energy storage .. July 123

COMPUTERS & THEIR APPLICATIONS
Computer filters feedback for better booster control .... Oct 49
Computer simulates vehicle suspension systems ..... Ap 44
Computer tells way to turn part from bar stock ..... Fe 88
Computer used to solve driveline engineering problems .... Ap 54
Computers help design valve trains ..... Mr 30
Computers improve understanding of dynamic matching of inlet duct airflow with engine airflow for supersonic aircraft ..... May 46
Data processing equipment needed tomorrow ..... Mr 58
Friction "linearization" aids valve motion study ..... June 106
No moving parts needed! Fluid amplifiers perform electronic-like functions . . . without moving parts ..... Aug 38
1964 passenger-car engineering trends ..... Nov 30
Tractor engine power monitored by analog simulation ..... Fe 70
When designing space components, think small ..... Fe 129

CONSTRUCTION & INDUSTRIAL EQUIPMENT — DESIGN & PERFORMANCE (see also Engine headings)
CIMTC expands standardization efforts ..... Se 80
Driverless trains reduce handling costs ..... Fe 77
From blade plows to snow blowers . . . modern snow removal equipment ..... Oct 85
Know your loads — farm and construction equipment are subject to a variety of unforeseen loads that affect fatigue life ..... May 52
Remote controls for tractors and construction vehicles .... Fe 78
Remote radio control of tractors ..... Fe 80

COOLING, ENGINE
Intercooling benefits vary in open and precombustion chamber diesels ..... Dec 50
New studies help predict coolant performance in cars .... July 51
Oil cooling medium must fit application ..... Dec 62
Roundup of ideas on heavy-duty cooling ..... Se 64
Rover's turbine engine heat exchanger ..... Fe 34
Tubular heat exchangers recuperate turboprop engines .... Mr 82

CORROSION
Aluminum alloys OK for Mach 2.5 ..... Dec 42
Aluminum trim resists corrosion ..... June 109
Bumper corrosion reduced by controls ..... Ap 134
Electric corrosometer tests bring new engine rust data .. July 67
Improving corrosion resistance of exterior trim ..... Fe 58
Proper prime use minimizes automotive body corrosion .. June 102
Three steps to arrest body and molding corrosion ..... July 34
Welding galvanized sheet can be tricky ..... July 102

CRANKCASE EMISSION CONTROL SYSTEMS
Spot the weak spots of pollution controls ..... Oct 102

CRYOGENICS
Careful design conserves cryogenics stored in near-earth orbit till rendezvous ..... June 103
Coolants boost motor horsepower ..... Oct 78
Cryogenic tank is hard to clean ..... Fe 129
Leak detector measures hydrogen permeation of vapor barrier materials ..... Nov 99
New easy-bonding adhesives retain toughness at −400 F .. May 38
Soft solders rated for cryogenic service ..... Mr 80

D

DEPOSITS, ENGINE
Ashless detergent oil with EDB improves outboard engine operation ..... Nov 103
Low-ash oils help against runaway surface ignition .... Jan 101
Multifuel capability sought for small gas turbines ..... Nov 84
New technique predicts sludging ..... Mr 86
Sludge formation doesn't indicate engine cleanliness .... Nov 51

DETONATION — see Combustion, Abnormal

DIRECT CONVERSION TO ELECTRICITY
Cool plasma lifts hopes for MGD space power ..... Oct 58
Fuel cells progress toward commercial applications ..... Aug 30
Portable thermoelectric unit may come soon ..... Ap 32
4-wheel drive adds to tractor stability ..... Jan 104

DRIVES, 4 & 6 WHEEL
Why farm tractors go four-wheel drive ..... Se 60

DRIVESHAFTS
Computer used to solve driveline engineering problems .... Ap 54
Rubber spring boosts driveline flexibility ..... Dec 88

E

EDUCATION
Manufacturer training centers aid to better maintenance .. Dec 90
Programmed instruction faster than lecture-study methods . Fe 73
3 techniques for creating a value analysis environment .... Dec 65

ELECTRICAL & ELECTRONIC EQUIPMENT (see also Ignition Systems)
Alternators have intrinsic design advantages ..... Aug 80
Chevrolet cranks hot and cold engines . . . to determine starting system requirements ..... Dec 79
"Cool" lights or hot cabins — SST alternates ..... July 33
Coolants boost motor horsepower ..... Oct 78
Design-significant inspection regulations getting tighter .. Aug 54
Electrical controls feasible for lift engines of VTOL craft . July 91
Electrical interference must be designed out of transport aircraft ..... June 54
Electroluminescent lamps improve aircraft instrument lighting ..... May 78
European interest in standardization ..... Fe 50
For heavy-duty vehicles good cranking system design depends on (1) estimating procedures; (2) cold cranking tests ..... Se 52
High temperature electrical systems ..... Mr 90
1964 passenger-car engineering trends ..... Nov 30
"Pick 'em right!" — and equipment packages will meet vehicle electrical load demands ..... Se 83
Selecting alternators for a-c charging systems ..... Aug 82
Space environment necessitates new techniques for control of electromagnetic interference ..... July 78
Troubleshooting a-c charging systems ..... Aug 84

ENGINE CONTROL, JET & ROCKET
Electrical controls feasible for lift engines of VTOL craft July 91
Precise speed control system demonstrated for recuperated gas turbine engine ..... Nov 78
System applies new method to gas turbine fuel control .. Nov 102

ENGINE COOLING — see Cooling, Engine

ENGINES, DIESEL
18 aids to subzero starting of diesels ..... June 107
Allis-Chalmers lifts diesel tractor performance ..... Fe 82
Big diesel runs smoothly ..... July 102
Charts help map performance of turbocharged CI engines Dec 66
Diesels can be built to give 1 bhp per cu. in. ..... May 95
How to estimate piston crown temperature ..... May 97
How one manufacturer tailored an engine to a tractor and to a loader ..... Nov 92
Intake manifold torch helps "cold-start" diesels ..... June 132
Intercooling benefits vary in open and precombustion chamber diesels ..... Dec 50
Nitrogen oxides — diesel villain — gases attack lubricating oil and engine parts ..... Se 70
Single drop theory helps appraise injection against swirl .. Ap 57
Two tools to help diesel engines beat the heat ..... Se 49
Why's of diesel combustion fathomed ..... Se 91

ENGINES, GASOLINE HEAVY-DUTY
Tractor engine power monitored by analog simulation .... Fe 70

ENGINES, GASOLINE — MEDIUM-DUTY
Allowable stress diagrams help solve strength problems .. Ap 70
Antiknock performance clocked on turbocharged engines of Corvair and Oldsmobile ..... Aug 92
Chevrolet cranks hot and cold engines . . . to determine starting system requirements ..... Dec 79
1964 passenger-car engineering trends ..... Nov 30
Some problems in designing the Avanti ..... Mr 52

ENGINES, GASOLINE, SMALL
Bore, not rings could start trouble in small engines ..... Mr 91
Oils for European 2-stroke engines studied ..... July 121

ENGINES, GENERAL
Bifuel engines offer economic advantages where vegetable oils abound ..... Ap 84
Collector gathers solar energy ..... Mr 84
Distributor caps evaluated by easy test ..... June 65
First rotary combustion engine ..... Nov 52
For heavy-duty vehicles good cranking system design depends on (1) estimating procedures; (2) cold cranking tests ..... Se 52
Fuel injection into swirling air gives stratification ..... Ap 56
Good maintenance essential to effective air emission system performance ..... July 101
How to lower oil-to-fuel ratio and lift performance of two-stroke engines ..... Aug 78
Improvements with hybrid Otto-diesel engines ..... Jan 100
New studies help predict coolant performance in cars .... July 51
Rotating combustion engine is well suited to aircraft use May 82
Schlamann stratified-charge engine could be great ..... Nov 60

ENGINES, JET & TURBINE — GROUND VEHICLE, INDUSTRIAL & MARINE
Conflicting demands beset designer of gasifier turbines .. Fe 67
Gas turbines drive special high-speed naval craft ..... July 70
Multifuel capability sought for small gas turbines ..... Nov 84
Precise speed control system demonstrated for recuperated gas turbine engine ..... Nov 78
Radial turbine efficiency can equal axial turbine efficiency July 93
Rim cracking in turbine discs can be eliminated ..... Ap 92
Rover's newest gas turbine car ..... Mr 63
Rover's turbine engine heat exchanger ..... Fe 34

ENGINES, MULTIFUEL
Improvements with hybrid Otto-diesel engines ..... Jan 100

ENGINES, ROCKET
CW engineers design uncooled pyrolytic graphite nozzles .. Jan 81
Last ounce of rocket thrust may cost dearly in reliability June 79
J-2 rocket engine design . . . dictated by liquid hydrogen fuel ..... July 52
"Roll-and-weld" technique fabricates rocket engine cases Jan 137
The M-1 rocket engine — 1,500,000 pounds of thrust .... June 72

ENGINES, TURBOJET — AIRCRAFT
Computers improve understanding of dynamic matching of inlet duct airflow with engine airflow for supersonic aircraft ..... May 46
Rolls-Royce investigates longer life igniters for jets .... July 120
Small liftjet designed for multi-unit use in VTOLs .... June 107
Supersonic transport performance boosted ..... Fe 42

ENGINES, TURBOPROP & TURBOSHAFT — AIRCRAFT
Growth highlights T-74 engine development ..... May 54
Liquid-metal coupled regenerator can be adapted to aircraft turboshaft engine ..... July 58
Multiple engines improve SFC of gas turbines at part load June 109
Thrust ratio effects calculated for lift-engine installation requirements ..... Ap 133

EXHAUST SYSTEMS & GASES
Engine modifications almost halve hydrocarbon and CO exhaust content, Chrysler studies indicate ..... Ap 84
Vehicle smog control progresses in California ..... Jan 104

F

FARM MACHINERY
Agri-Robot — the automated plow ..... Se 36
Closed-center hydraulics for tractors ..... Oct 74
Designing tractors for the world market ..... Oct 71
Hitch and quick coupler feature John Deere 5010 tractor Fe 82
Know your loads — Farm and construction equipment are subject to a variety of unforeseen loads that affect fatigue life ..... May 52
New IHC tractors provide flexible hitch arrangements .... Se 68
Plow, soil type define soil breakup energy needs ..... Se 88
Tractor design problems met ..... Jan 97
What's wanted for tractors in 1970 ..... Fe 52
Why farm tractors go four-wheel drive ..... Se 60

FATIGUE LIFE
Fatigue calculations made easy ..... Oct 60

FATIGUE OF MATERIALS
Crack propagation theory modified ..... Dec 84

FILTERS, FUEL
Boron additive debugs diesel fuel ..... Ap 47
Fuel filter life cannot be predicted ..... Fe 74
Fuel system cleanliness improved ..... Mr 69
Rating system helps to evaluate filters ..... Oct 110
Tests disclose sources of fuel filter clogging ..... Fe 63

FILTERS, HYDRAULIC — see Hydraulic & Pneumatic Equip.

FILTERS, OIL
Advances made in lube oil filtration ..... Oct 112
Electrostatic fluid filters supplement mechanical types .... Mr 82
2-stage depth filter allows longer filter change interval .... Fe 83

FINISHES
Paint die castings immediately after cleaning for good adherence properties ..... May 98
Proper primer use minimizes automobile body corrosion June 102
Temporary wax coatings to protect car finish require special formulation ..... July 132

FLIGHT CONTROL — see Aircraft Flight Control

FRAMES
Quiet and comfort cost more with integral construction July 47
5-step outline for designing load-carrying members ..... Jan 95

FUEL CELLS — see Direct Conversion to Electricity

FUEL INJECTION
Development of Witzky pumpless injection ..... Oct 54
Fuel injection vs carburetion-pros and cons ..... July 129

FUELS, AVIATION
CRC study yields new aircraft fuel conductivity data .. Nov 75
Fuel cokers can be used as quality control devices ..... Ap 91
Microorganisms bug aircraft fuels, too ..... Ap 49

FUELS, DIESEL
Army studies fuels under arctic conditions ..... May 94
Boron additive debugs diesel fuel ..... Ap 47

FUELS, GENERAL
Ignition delay analyzed from self-ignition of fuel drops .. May 42

FUELS, MOTOR
Car octane needs leveling off, survey of 1962 cars indicates Aug 58
Fuel filter life cannot be predicted ..... Fe 74
Fuel system cleanliness improved ..... Mr 69
Leaded LP-gas gives high knock-limited power in recent lab tests ..... Nov 103
No "best" fuel yet made for racing engines ..... Ap 84
Tests disclose sources of fuel filter clogging ..... Fe 63
3 unfilled lube and fuel needs ..... Fe 30
Vapor lock still problem 1960 CRC test results show .... July 130

FUELS, ROCKET
Careful design conserves cryogenics stored in near-earth orbit till rendezvous ..... June 103
Insulation cuts liquid hydrogen boil-off losses ..... Nov 82
Leak detector measures hydrogen permeation of vapor barrier materials ..... Nov 99

G

GAS TURBINES
Liquid-metal coupled regenerator can be adapted to aircraft turboshaft engine ..... July 58
Prime power choice for missile support ..... Jan 98

GENERATORS — see Electrical & Electronic Equipment

GOVERNORS
Automatic transmissions ..... Jan 89

GROUND EFFECT MACHINES
Channel flow supports MARAD GEM ..... Oct 106
Hydroskimmer floats on air ..... Oct 113
Improving GEM vehicle performance ..... May 60
Using ejectors improves GEM efficiency ..... Jan 97
Where GEMs fit in the transportation scheme ..... Oct 32

GROUND SUPPORT EQUIPMENT
Prime power choice for missile support ..... Jan 98
SAE ARP 761 recommends standardization for ground support equipment manuals ..... June 99

H

HEAT TRANSFER
Liquid-metal coupled regenerator can be adapted to aircraft turboshaft engine ..... July 58

HELICOPTERS — see Aircraft, Rotating Wing

HONEYCOMB STRUCTURE
Braze alloys evaluated for refractory metal sandwich structures ..... July 137
Honeycomb tailpipe saves weight in C-141 ..... Dec 83
Portable vacuum chambers permit electron beam welding of large aerospace structures ..... May 86

HUMAN ENGINEERING
CIMTC expands standardization efforts ..... Se 80
High-speed chain saw vibrations not injurious if amplitude is kept low ..... Se 90
Human Factors specialist . . . new necessity in systems designing ..... Ap 86
Instrument to measure how people drive their vehicles .. July 56
Lunar surface vehicle and crew must become "we" for successful mission ..... May 94
Strong radio-frequency fields can damage humans' body tissues ..... June 100
Study of chain saw noise determines acceptable limits, points way to silencing ..... Se 91

HYDRAULIC & PNEUMATIC EQUIPMENT
Automatic transmissions ..... Jan 89
Cleanliness requirements for hydraulic fluids become unrealistic ..... Mr 88
Closed-center hydraulics for tractors ..... Oct 74
Dynamic control systems ..... Mr 36
Electrostatic fluid filters supplement mechanical types .... Mr 82
Fluid flight control system on tap for saturn ..... May 62
Future flight controls: hydraulic or mechanical? ..... Dec 92
Hydraulic components tested at 1000 F ..... Oct 108
Hydraulic cylinder design influenced by environment, system pressure, force requirements ..... Nov 68
Integral union cuts weight, size, failures ..... Nov 102
New capabilities predicted soon in fluids for hydraulic system use ..... Aug 74

New filtering concept solution to hydraulic system contamination ..... Jan 73
No moving parts needed! Fluid amplifiers perform electronic-like functions . . . without moving parts ..... Aug 38
Optimum hydraulic accumulator design includes real gas effects ..... Aug 68
20 parameters for selecting hydraulic fluids ..... Oct 46
Picked particles preferred . . . high-speed fluid contamination checks hinge on calibrating instruments to standard contaminants ..... Oct 82
When designing space components, think small ..... Fe 129

HYDROFOIL CRAFT
Buships finds 4 materials promising for hydrofoils ..... May 90
Gas turbines drive special high-speed naval craft ..... July 70
Stanford research pegs future hydrofoil market ..... Nov 110

I

IGNITION SYSTEMS
Breakerless high-frequency ignition system developed for aircraft piston engines ..... July 74
Chevrolet cranks hot and cold engines . . . to determine starting system requirements ..... Dec 79
Electronics spark better use of time-honored ignition principles ..... July 48
Faster risetimes key to better ignition ..... May 130
Ignition system features electronic triggering ..... July 100
Reliable ignition needs trouble-free transistors ..... Oct 41
Solid-state solutions to ignition problems ..... Oct 95
Surface gap ignition opens way to raise bmep of 2-stroke cycle engines ..... Dec 85
Transistorized ignition has benefits and limitations ..... Ap 87

IGNITION TRANSISTORS
Devices protect ignition transistors ..... May 92

INSTRUMENTS & INSTRUMENTATION
A car engineer inspects state vehicle inspection techniques June 75
Army specifies aircraft instrumentation needs ..... July 99
Electric corrosometer tests bring new engine rust data .. July 67
Instrument to measure how people drive their vehicles .. July 56
Leak detector measures hydrogen permeation of vapor barrier materials ..... Nov 99
New procedure simplifies axle noise evaluation ..... July 68
Picked particles preferred . . . high-speed fluid contamination checks hinge on calibrating instruments to standard contaminants ..... Oct 82
Two tools to help diesel engines beat the heat ..... Se 49
Use thermocouples right and melt away weight ..... Nov 58

K

KNOCK — see Combustion, Abnormal

L

LABORATORY EQUIPMENT & FACILITIES
Apparatus measures torsional vibration of small engines .. May 92
CRC coker readied for stressing jet fuels ..... Mr 80
Ford mobile fuel laboratory makes possible testing where weather suits ..... Nov 96
Machine simulates rough road for wheeled vehicles .... June 105
Mobot the robot is an electronic marvel ..... Fe 81
New impact machine simulates crash conditions in reverse June 102
Rollers fatigue-tested in Caterpillar studies ..... Ap 104
Shock testing machines come in many varieties ..... Jan 76
Small differences in tire properties = large differences in vehicle handling ..... July 83
Tool measures piston temperature of diesels ..... May 83

LANDING GEAR — AIRCRAFT
The cost of landing an airplane ..... Dec. 47

LIGHTS — see Electrical & Electronic Equipment
LIGHTING — see Electrical & Electronic Equipment

LUBRICANTS & LUBRICATION — AEROSPACE
New high-temperature test rates oxidation stabilities of aircraft additive oils ..... Aug 88

LUBRICANTS & LUBRICATION — AXLE & TRANSMISSION
Automatic transmissions ..... Jan 89
Formulating automatic transmission fluids ..... Mr 84
Transmission squawk traced to clutch-plate adsorption ... Nov 80

LUBRICANTS & LUBRICATION — ENGINE
Ashless detergent oil with EDB improves outboard engine operation ..... Nov 103
Loggers need simplified lubrication for economy ..... Se 92
Low-ash oils help against runaway surface ignition ..... Jan 101
New technique predicts sludging ..... Mr 86
Nitrogen oxides — diesel villain — gases attack lubricating oil and engine parts ..... Se 70
Oils for European 2-stroke engines studied ..... July 121
Rating engine oils with greater accuracy ..... July 101
Sludge formation doesn't indicate engine cleanliness ..... Nov 51
3 unfilled lube and fuel needs ..... Fe 30

LUBRICANTS & LUBRICATION — GREASES
Spectrometry speeds grease identification ..... Aug 37

LUBRICANTS & LUBRICATION — MISCELLANEOUS
Equation simplifies viscosity-pressure-temperature relationship of lubricating oils ..... June 108
Loggers need simplified lubrication for economy ..... Se 92
Lube effects vary in clutch lining friction performance .... Ap 134
New capabilities seen for resin-bonded dry film lubes ..... May 98

M

MACHINING — see Production — Methods

MANAGEMENT
Communications is the key to the human-nature guidance necessary to management control ..... Nov. 54

MATERIALS, NONMETALLIC
New glasses feature automotive potentials ..... Oct 109
Paint die castings immediately after cleaning for good adherence properties ..... May 98
Three techniques arrest material fracture ..... Ap 87

METALS FERROUS
Improving corrosion resistance of exterior trim ..... Fe 58
Metallic cloth new space material ..... Mr 84
1964 passenger-car engineering trends ..... Nov 30
Tomorrow's better materials ..... Fe 26
Using marage steel for welded airframes ..... Nov 98
Watch those extraneous factors in fatigue testing ..... Mr 87
Welding galvanized sheet can be tricky ..... July 102

METALS, NONFERROUS (See also Aluminum, Alloys; Titanium)
Improving corrosion resistance of exterior trim ..... Fe 58
Knowledge of how to machine hard-to-machine refractory metals ..... Nov 88
New superalloy sheets feature high-temperature strength .. Dec 56
Part I — Refractory metal properties — how they react to machining ..... Aug 34
Part II — How to machine columbium and its alloys .... Se 98
Part III — How to machine molybdenum and its alloys ... Oct 90
Part IV — How to machine tantalum and its alloys ..... Nov 88
Part V — How to machine tungsten and its alloys ..... Dec 70
Soft solders rated for cryogenic service ..... Mr 80
Tomorrow's better materials ..... Fe 26

MILITARY AVIATION — see Aviation, Military

MILITARY GROUND EQUIPMENT
Army tracked vehicle expands multipurpose concept ..... Ap 65
Army's sandpiper fork lift truck ..... Ap 36
Better specifying seen as basis for improved Army vehicle mobility ..... Jan 58
Powered-axle concept gives army mobile, multipurpose vehicles ..... May 90
Tests show what to expect from mothballing vehicles for outdoor storage ..... Se 74

MISCELLANEOUS NONTECHNICAL SUBJECTS
An engineer's view of "local content" ..... Mr 34
Chesebrough explodes fallacies about the automobile industry ..... Aug 44
Creative designer needs three information inputs, says GE vice president — engineering ..... May 36
Definition + Discipline = Decision that makes sense ..... Oct 28
Excellent individual achievement is key to progress ..... July 30
How an engineer can cope with galloping technology ..... Ap 35
Nation climbing out from under a deluge of data ..... Dec 30
Technical developments sparking astonishing European automotive growth ..... Oct 64
3 techniques for creating a valve analysis environment ... Dec 65
140 trained engineering technicians making progress at du Pont ..... Oct 30
Tri-service program works for improved electromagnetic compatibility ..... June 100
Value engineering at Ford saves dollars ..... Mr 26
What it takes to be an engineer ..... Mr 81
5 young engineers give their own answers to: "What is your job at Allison?" ..... June 86

MISCELLANEOUS TECHNICAL SUBJECTS
Application determines best method of energy storage ... July 123
CAMS concept integrates man and machine ..... Nov 65
Design-significant inspection regulations getting tighter .. Aug 54
Getting the most for the money in shop space for common carriers ..... Dec 44
How to improve on engineering judgment ..... Jan 69
Industry is invited to feed on NASA byproducts ..... Mr 54
Microwave developments bring new communications horizons Ap 87
New vehicle identification numbers designated: will aid in establishing industry-wide standards to help prevent car thefts ..... Aug 104
Roller chains attain higher hp's and speeds ..... Dec 88
What can civilian industry get from space-oriented R&D? . Aug 61

MISSILES (see also Engines, Rocket)
6–10 gyrocompasses needed for control of big missiles .... May 84
Missile flight is short but hot ..... Jan 86
Propellant feed system optimization depends on choice of (1) LOX tank location; (2) bulkhead configuration .... Aug 64

MOLYBDENUM — see Metals, Nonferrous

N

NOISE
Engine noise reduction gives more mechanical octanes ....May 89
New procedure simplifies axle noise evaluation ..... July 68
Study of chain saw noise determines acceptable limits, points way to silencing ..... Se 91

NUCLEAR POWER
9.5 mills/kwhr power cost at Yankee atomic plant ..... Mr 87

O

OCTANE RATINGS & TEST METHODS
Antiknock performance clocked on turbocharged engines of Corvair and Oldsmobile ..... Aug 92
Car octane needs leveling off, survey of 1962 cars indicates Aug 58

P

PASSENGER-CAR DESIGN & PERFORMANCE
Analog model helps lower wind disturbances on cars ..... Oct 36
1964 passenger-car engineering trends ..... Nov 30
Some problems in designing the Avanti ..... Mr 52
Two of new Riviera design features ..... July 122
What makes a "good handling" car ..... July 98

PISTONS & RINGS
Bore, not rings could start trouble in small engines ..... Mr 91
How to estimate piston crown temperature ..... May 97
Look for trouble when engine parts get too hot ..... Ap 93
Redesign ups performance of submarine diesel pistons .... May 96
Steel rail ring aids oil control ..... Jan 108
Tool measures piston temperature of diesels ..... May 83

PLASTICS & SYNTHETIC FIBERS
EPR polymers warrant trial in bodies ..... May 84
First fiberglass plane design ..... Mr 72
Hauling liquids in plastic tanks now feasible ..... Fe 76
Improvement in art and materials advance filament-wound products ..... June 104
New metal plastic laminate promises cheaper, lighter body panels ..... Nov 98
Oleform modified polypropylene . . . new automotive plastic . Ap 90
Photoelastic plastics aid redesign ..... Oct 107
Reinforced plastics — fabrication ..... May 28
Reinforced plastics — materials ..... June 66
TUFFAK gains favor for convertible rear windows ..... Jan 103
Where automotive engineers sit with urethane foam ..... Oct 63

PNEUMATIC EQUIPMENT — see Hydraulic & Pneumatic Equipment

POWDER METALLURGY
Power metal brake linings eliminate fade, engineers say — June 44
Powder metallurgy advances boost automotive applications . Fe 39

PREIGNITION — see Combustion, Abnormal

PRODUCTION — METHODS (see also Castings, Welding)
100 Avanti body parts produced from molded fiber glass .. Oct 66
Electro-hydraulic and magnetic forming — two new processes for shaping metals ..... July 97
Electrochemical machining — when and how to use it .... July 94
Europe does more fabrication R&D ..... Aug 52
High energy forging — new production tool ..... June 104
How to calculate machining speeds . . . from the physical properties of metals ..... July 63
Part I — Refractory metal properties — how they react to machining ..... Aug 34
Part II — How to machine columbium and its alloys .... Se 98
Part III — How to machine molybdenum and its alloys ... Oct 90
Part IV — How to machine tantalum and its alloys ..... Nov 88
Part V — How to machine tungsten and its alloys ..... Dec 70
LASER fabricates space-age materials ..... Fe 56
LASER leads to new metal-removal technique ..... Jan 103
Reinforced plastics — fabrication ..... May 28
"Roll-and-weld" technique fabricates rocket engine cases .Jan 137
Selecting a high-energy-rate forming system ..... Ap 88
Ultrasonic vibrations shape metals ..... July 36

PRODUCTION — OPERATIONS PLANNING
Automatic systems check manufacturing cost and performance ..... Jan 103
Autoprod — a systems concept integrated from idea to customer ..... May 99
Computer tells way to turn part from bar stock ..... Fe 88
Driverless trains reduce handling costs ..... Fe 77
PERT keeps management informed ..... Ap 26
To get high cost items out of new designs make every man a value engineer ..... Nov 76

PRODUCTION — QUALITY CONTROL
Bumper corrosion reduced by controls .....Ap 134
Grading machines help engineers control tire non-uniformity effects on car vibration ..... June 80

PROPELLANTS, ROCKET — see Fuels, Rocket

PROPELLERS, AIRCRAFT
Turboduct prop advantageous for 0 to 0.06 Mach aircraft .. Mr 88

R

RACING
"Indy" winners are made, not born ..... Jan 101

RADIATORS, see Cooling, Engine

RADIOACTIVITY
Mobot the robot is an electronic marvel ..... Fe 81

RADIOS
Remote radio control of tractors ..... Fe 80

RELIABILITY
Airlines need new order of reliability — a major airline V. P. tells how to get it ..... June 42
727 — Boeing's most reliable jet ..... Dec 52
Customer-vendor teamwork leads to reliability gains ..... Dec 35
Designers and reliability specialists — Here's how the twain can meet! ..... Oct 98
Incoming inspection cuts semiconductor failures ..... Oct 112
Last ounce of rocket thrust may cost dearly in reliability June 79
Performance specs basis of practical quantitative reliability requirements ..... Ap 92

RIDING QUALITY
Quiet and comfort cost more with integral construction .. July 47
Small differences in tire properties = large differences in vehicle handling ..... July 83
There is some common ground among ride improvement researchers . . . but there are plenty of differences, too June 68
What makes a "good handling" car ..... July 98

RINGS — see Pistons & Rings

RUBBER & ELASTOMERS
Tests show what to expect from mothballing vehicles for outdoor storage ..... Se 74

S

SEALS
Automatic transmissions ..... Jan 89
Hydraulic cylinder design influenced by environment, system pressure, force requirements ..... Nov 68

SHOCK — see Vibration

SPACE TRAVEL-PROTECTIVE EQUIPMENT
Elastic wheel seen good for lunar vehicles ..... May 132
Moon exploration in a vehicle built for two ..... Fe 46

SPACE VEHICLE FLIGHT CONTROL
Computer filters feedback for better booster control ..... Oct 49
Fluid flight control system on tap for Saturn ..... May 62

SPACE VEHICLE RECOVERY
Inflatable decelerator developed for re-entering space capsules ..... June 101
Project FIRE blazes trail for Apollo re-entry ..... Dec 76

SPACE VEHICLES & SATELLITES
Careful design conserves cryogenics stored in near-earth orbit till rendezvous ..... June 103
Lunar surface vehicle and crew must become "we" for successful mission ..... May 94
The Saturn S-II stage — a progress report ..... Ap 85

SPARK PLUGS
Surface gap ignition opens way to raise bmep of 2-stroke-cycle engines ..... Dec 85

SPORTS CARS
Hows and whys in design of Ford's Mustang ..... May 57

SPRINGS
Rubber spring boosts driveline flexibility ..... Dec 88

STEEL — see Metals, Ferrous

STEERING SYSTEMS
Allowable stress diagrams help solve strength problems .... Ap 70
Caterpillar hydraulic steering system has follow-up correction ..... July 99
1964 passenger-car engineering trends ..... Nov 30
Scale model helps solve steering problems ..... Mr 33

STRESSES
Allowable stress diagrams help solve strength problems .... Ap 70
Crack propagation theory modified ..... Dec 84
Creep causes torque loss in flat face gasketed joint assemblies ..... May 85
Fatigue life found from static tests ..... Se 86
Low-cycle flexural fatigue studies aid designer of complex metal structures ..... May 130
Photoelastic plastics aid redesign ..... Oct 107
5-step outline for designing load-carrying members ..... Jan 95

SUPERCHARGERS & SUPERCHARGING
Allis-Chalmers lifts diesel tractor performance ..... Fe 82
Charts help map performance of turbocharged CI engines . Dec 66
Intercooling benefits vary in open and precombustion chamber diesels ..... Dec 50

SUSPENSION SYSTEMS
A car engineer inspects state vehicle inspection techniques June 75
Computer simulates vehicle suspension systems ..... Ap 44
Designing front suspensions — an approach to get systems compatible with framebody or unitized structures ..... June 46
1964 passenger-car engineering trends ..... Nov 30
Rear suspension isolation — how best to accomplish it .... Ap 68

T

TANKS, FUEL
Fuel system cleanliness improved ..... Mr 69
Insulation cuts liquid hydrogen boil-off losses ..... Nov 82
Leak detector measures hydrogen permeation of vapor barrier materials ..... Nov 99
Propellant feed system optimization depends on choice of (1) LOX tank location; (2) bulkhead configuration .... Aug 64

THERMAL PROTECTION AT HIGH SPEED
Missile flight is short but hot ..... Jan 86
Tomorrow's better materials ..... Fe 26

TIRES & RIMS, PASSENGER CAR
Analog model helps lower wind disturbances on cars ..... Oct 36
Grading machines help engineers control tire non-uniformity effects on car vibration ..... June 80
New lab studies predict tire cornering forces ..... Nov 94
Small differences in tire properties = large differences in vehicle handling ..... July 83
Tire's side force response depends on distance rolled ..... Aug 95

TIRES & RIMS, TRUCK & HEAVY EQUIPMENT
Better specifying seen as basis for improved Army vehicle mobility ..... Jan 58
Dual tires run cooler than singles on off-highway vehicles Oct 110
Engineers consolidate gains; vision next advances in heavy-duty truck tires ..... Se 54
Tests tire effect on tractor traction ..... Fe 77

THERMAL PROTECTION AT HIGH SPEED
Project FIRE blazes trail for Apollo re-entry ..... Dec 76

TIRES & RIMS, AIRCRAFT — see Landing Gear, Aircraft

TRANSMISSION, PASSENGER CAR
Automatic transmissions ..... Jan 89
1964 passenger-car engineering trends ..... Nov 30
Transmission squawk traced to clutch-plate adsorption .. Nov 80
Volvo-Matic's new automatic geared turbine transmission . Ap 38

TRANSMISSIONS, TRUCK, HEAVY EQUIPMENT, AND MARINE
Modulated clutch between engine and torque converter features new Twin Disc design ..... Se 42
New automatic transient control shifts jaw-clutch transmission ..... Se 45
New transmission features simple design and better performance ..... Jan 74
20 practical pointers for tractor powershift transmission designers ..... Dec 40
Recent heavy duty transmissions reflect design progress .. Se 38
Recent transmissions designed for off-highway needs .... Se 44
Shuttle shift design is key to industrial vehicle transmission ..... June 82

TRUCK DESIGN & PERFORMANCE
Hauling liquids in plastic tanks now feasible ..... Fe 76
New truck-related standards completed; others in process Se 78

V

VALVES & VALVE MECHANISMS
Automatic transmissions ..... Jan 89
Computers help design valve trains ..... Mr 30
Friction "linearization" aids valve motion study ..... June 106
Look for trouble when engine parts get too hot ..... Ap 93
Special problems solved in designing Corvair-Spyder camshaft ..... Ap 82

VAPOR LOCK
Vapor lock still problem 1960 CRC test results show .... July 130

VIBRATION & SHOCK
Apparatus measures torsional vibration of small engines . May 92
By-passing torsional vibrations ..... Se 93
Douglas tests derive vibration modal data ..... Dec 83
High-speed chain saw vibrations not injurious if amplitude is kept low ..... Se 90
Input motion characteristics can predict equipment damage ..... June 132
Parameter use simplifies analysis of non-linear response to shock ..... July 130
Quiet and comfort cost more with integral construction .. July 47
Shock testing machines come in many varieties ..... Jan 76
Shifting natural frequency cuts torque fluctuations in tractor-implement systems ..... Dec 87
Transducers measure transient motion in shock test ..... Aug 96
Ultrasonic vibrations shape metals ..... July 36

W

WELDING
Electron beam welding — soon a production process ..... Jan 62
LASER fabricates space-age materials ..... Fe 56
Portable vacuum chambers permit electron beam welding of large aerospace structures ..... May 86
Welding galvanized sheet can be tricky ..... July 102

WINDSHIELDS
How Chrysler evaluates windshield surfaces ..... July 42

Authors' Index

A

ABDOU, M. I. and M. M. El-Wakil — Ignition Delay Analyzed from self-ignition of fuel drops ..... May 42
ADADEVOH, JOHN K., and O. A. Uyehara, P. S. Myers — Why's of diesel combustion fathomed ..... Se 91
ADAMS, R. M. and G. N. Brock — How to cut cost of aircraft maintenance ..... Dec 84
ADAMSON, J. F. — Fewer parts, greater strength, less weight achieved with Rambler "uniside" construction .... May 90
AHEARN, P. J. and P. A. G. Carbonaro — Army needs higher strength steel castings for future ..... May 98
ALBERTSON, C. E. — H. S. Okubo — Lube effects vary in clutch lining friction performance ..... Ap 134
ALFORD, J. S. — D. P. Davies and L. C. Young — Computers improve understanding of dynamic matching of inlet duct airflow with engine airflow for supersonic aircraft ..... May 46
AMANN, C. A. — D. W. Dawson and M. K. Yu — Conflicting demands beset designer of gasifier turbines ..... Fe 67
AMANN, CHARLES A. — David W. Dawson and Mason K. Yu — Rim cracking in turbine discs can be eliminated .... Ap 92
ANDERSON, G. V. — K. J. Miller and R. E. Kutchera — Electron Beam Welding — Soon a production process .... Jan 62
ANDERSON, GERALD V. — Portable vacuum chambers permit electron beam welding of large aerospace structures ..... May 86
ANDON, JERAR and Craig Marks — Engine noise reduction gives more mechanical octanes ..... May 89
APPELDOORN, J. K. — Equation simplifies viscosity-pressure-temperature relationship of lubricating oils .... June 108
ARD, HENRY N. — Loggers need simplified lubrication for economy ..... Se 92
ARZT, P. R. and I. J. Stewart — Part I — Refractory metal properties — how they react to machining ..... Aug 34
ARZT, P. R. and I. J. Stewart — Part II — How to machine columbium and its alloys ..... Se 98
ARZT, P. R. and I. J. Stewart — Part III — How to machine molybdenum and its alloys ..... Oct 90
ARZT, P. R. and I. J. Stewart — Part IV — How to machine tantalum and its alloys ..... Nov 88
ARZT, P. R., and I. J. Stewart — Part V — How to machine tungsten and its alloys ..... Dec 70

B

BACKOFEN, E. RYAN, Marshall D. Sawdey, Richard McIntosh, William Norlander — Hydraulic cylinder design influenced by environment, system pressure, force requirements ..... Nov 68
BAGAN, M. F. — Helicopter communting ahead for masses in SF bay area ..... Ap 81
BAGBY, C. L. — Thrust ratio effects calculated for lift-engine installation requirements ..... Ap 133
BAILEY, C. D., W. D. Holland, and J. Hulsebos — Leak detector measures hydrogen permeation of vapor barrier materials ..... Nov 99
BAILEY, C. H. — Electric corrosometer tests bring new engine rust data ..... July 67
BAILEY, J. R., High-speed chain saw vibrations not injurious if amplitude is kept low ..... Se 90
BAJER, J. — Grading machines help engineers control tire non-uniformity effects on car vibration ..... June 80
BAKER, J. B., — L. B. Scott and J. G. Ryan — Low-ash oils help against runaway surface ignition ..... Jan 101
BAKER, R. M. — Aircraft arresting systems can benefit commercial aviation ..... June 40
BALAMUTH, LEWIS — Ultrasonic vibrations shape metals July 36
BARTON, M. V. — Y. C. Fung and D. Young — Parameter use simplifies analysis of non-linear response to shock .. July 130
BATCHELOR, C. S. — Earl W. Reinsch — Frank H. Highley — Bruce W. Klein and G. R. Graham — Powder metal brake linings eliminate fade, engineers say — ... June 44
BATCHELOR, R. and M. Erickson — 5-step outline for designing load-carrying members ..... Jan 95
BAUER, HERBERT J. — John Versace — Bruce D. Van Deusen and Alfred D. Bosley — There is some common ground among ride improvement researchers . . . but there are plenty of differences too ..... June 68
BAXTER, IVAN and B. S. Murthy — Bi-fuel engines offer economic advantages where vegetable oils abound ..... Ap 84
BAYLIS, WESLEY C. — Microwave developments bring new communications horizons ..... Ap 87
BEAUDET, JOSEPH W. — Irving Tarlow and Irving M. Weitzler — Army's sandpiper fork lift truck ..... Ap 36
BEAUVIS, F. N. and J. R. Nothstine — New lab studies predict tire cornering forces ..... Nov 94
BELANGER, J. M., J. L. Maitre — Mothballing vehicles for Outdoor storage ..... Se 74
BENO, J. H. — Mobot the robot is an electronic marvel .... Fe 81
BENSTEIN, E. H. and H. J. Wood — Radial turbine efficiency can equal axial turbine efficiency ..... July 93
BENZING, R. J. and William A. Marshall — New capabilities predicted soon in fluids for hydraulic system use .. Aug 74
BIGNOTTI, G. — "Indy" winners are made, not born .... Jan 101
BISCHOFF, T. J. — R. A. Liston — R. B. Harrison — R. W. Gerdel — J. J. Murray — D. R. Freitag — S. J. Knight C. E. Robertson, Jr. — Better specifying seen as basis for improved Army vehicle mobility ..... Jan 58
BLACK, J. B. — Modulated clutch between engine and torque converter features new twin disc design ..... Se 42
BLAKE, R. E. — How to improve engineering judgment .... Jan 69
BLATTENBERGER, J. W. and W. J. Herman — Good maintenance essential to effective air emission system performance ..... July 101
BLUHM, JOSEPH I. — Three techniques arrest material fracture ..... Ap 87
BOCKRATH G. E., S. R. Valluri, J. B. Glassco — Crack propagation theory modified ..... Dec 84
BORDEN, D. — N. R. Roux and C. M. Stendahl — Formulating automatic transmission fluids ..... Mr 84
BORMAN, G. L. and J. H. Johnson — Single drop theory used to appraise injection against swirl in diesels ..... Ap 57
BOSLEY, ALFRED D. — John Versace — Bruce D. Van Deusen and Herbert J. Bauer — There is some common ground among ride improvement researchers but there are plenty of differences too ..... June 68

BOTT, F. W. — J. H. Redmond and G. H. Caine — Coolants boost motor horsepower ..... Oct 78
BOWERS, R. L. — Fuel filter life cannot be predicted ..... Fe 74
BOWSER, P. C. and S. C. Richey — What makes a "good handling" car ..... July 98
BOWSER, P. C. and S. C. Richey — Two of new Riviera design features ..... July 122
BOYLES, R. Q., Jr. and J. W. Tatom — Careful design conserves cryogenics stored in near-earth orbit till rendezvous ..... June 103
BRANDT, ERNEST — Welding galvanized sheet can be tricky ..... July 102
BRESS, HENRY, COMMANDER USN — Strong radio-frequency fields can damage humans' body tissues ..... June 100
BREWSTER, B. and R. V. Kerley — High temperatures trigger preignition ..... Dec 86
BRIDGES, J. M. — Tri-service program works for improved electromagnetic compatibility ..... June 100
BROCK, G. N. and R. M. Adams — How to cut cost of aircraft maintenance ..... Dec 84
BROWN, MACKENZIE P. — Caterpillar hydraulic steering system has follow up correction ..... July 99
BRUNNER, ALBERT — R. A. Goepfrich — L. F. Fiedler — S. G. Tilden, Jr. — Harold E. Fuerst and Clark R. Lupton — SAE introduces recommended practice for testing bonding quality of bonded brake shoes ..... Aug 47
BRZEZINSKI, CHARLES J. — Performance specs basis of practical quantitative reliability requirement ..... Ap 92
BUCHELE, W. F. — 4-wheel drive adds to tractor stability Jan 104
BUNDORF, R. THOMAS — Donald E. Pollock and M. C. Hardin — Analog model helps lower wind disturbances on cars ..... Oct 86
BURKE, R. W. and C. J. Dunne — Ignition system features electronic triggering ..... July 100
BURNETT, JOHN and Takeharu Taniguchi — Designers and reliability specialists — here's how the twain can meet ..... Oct 98
BUSH, G. F. — Improving corrosion resistance of exterior trim ..... Fe 58
BUTTERWOOD, W. and W. G. Richardson — Hauling liquids in plastic tanks now feasible ..... Fe 76

C

CABAL, A. V., A. E. Felt, and H. A. Williams, Jr. — Leaded LP-gas gives high knock-limited power in recent lab tests ..... Nov 103
CAHN, M. S. — Turboduct prop advantageous for 0 to 0.06 Mach aircraft ..... Mr 88
CAINE, G. H. — J. H. Redmond and F. W. Bott — Coolants boost motor horsepower ..... Oct 78
CARBONARO, P. A. G. and P. J. Ahearn — Army needs higher strength steel castings for future ..... May 98
CARLETON, R. S. and G. L. Graves — Gas turbines drive special high-speed naval craft ..... July 70
CARTER, W. E. — Alternators have intrinsic design advantages ..... Aug 80
CARTER, W. E. — Selecting alternators for A-C charging systems ..... Aug 82
CAVILEER, ALBERT C. — Redesign ups performance of submarine diesel pistons ..... May 96
CELLITTI, R. A. — Watch those extraneous factors in fatigue testing ..... Mr 87
CHAPPELL, T. E. and J. I. Gonzales — Missile flight is short but hot ..... Jan 86
CHESEBROUGH, HARRY E. Chesebrough explodes fallacies about the automobile industry ..... Aug 44
CHOATE, B. P. — From blade plows to snow blowers . . . modern snow removal equipment ..... Oct 85
CHRISTIAN, J. L. and J. F. Watson — Soft solders rated for cryogenic service ..... Mr 80
CICHOWSKI, W. G. — New impact machine simulates crash conditions in reverse ..... June 102
CLARK, D. S. — What it takes to be an engineer ..... Mr 81
CLARK, DONALD E. — Space environment necessitates new techniques for control of electromagnetic interference July 78
CLARK, J. M. — J. H. Horton and D. J. Skinner — Steel rail ring aids oil control ..... Jan 108
CLARK, JOHN M. JR. and William L. Rollwitz — Apparatus measures torsional vibration of small engines ..... May 92
CLERK, R. C. — Application determines best method of energy storage ..... July 123
COHEN, P. — ASW weapons improve . . . but submarine performance improves too ..... Jan 64
COLBURN, P. J. and S. E. Tweedy — Electrical controls feasible for lift engines of VTOL craft ..... July 91
COLBY, M. K. — By-passing torsional vibrations ..... Se 93
COLLEGEMAN, S. M. — C. A. Hall and J. B. Retzloff — New high-temperature test rates oxidation stabilities of aircraft additive oils ..... Aug 88
COLLIS, S. E. — Cryogenic tank is hard to clean ..... Fe 129
CONLEY, JOHN, J. L. De Weese, G. L. MacPherson, R. S. Mosher, Richard H. Sprince, and R. W. Wirta — CAMS concept integrates man and machine ..... Nov 65
COOPER, A. W. — W. R. Gill, G. E. Vanden Berg, and C. A. Reaves — Plow, soil type define soil breakup energy needs .. Se 88
COPENHAVER, J. L., Kenneth G. Plewes and Melvin A. Hiatt — 727 — Boeing's most reliable jet ..... Dec 52
CORTESE, A. D. and D. L. Nordeen — Small differences in tire properties = large differences in vehicle handling .... July 83
COURTNEY, R. L. and R. J. Putansu — Chevrolet cranks hot and cold engines ..... Dec 79
CREDE, C. E. — Shock testing machines come in many varieties ..... Jan 76
CURRY, R. C. and J. E. Davis — The cost of landing an airplane ..... Dec 47
CURRY, SHELLEY — Studies give rise to new knock theory Ap 43

D

DALENBERG, W. R. — New IHC tractors provide flexible hitch arrangements ..... Se 68
DATSKO, JOSEPH and Alexander Henkin — How to calculate machining speeds . . . from the physical properties of metals ..... July 63
DAVIES, D. P. — J. S. Alford and L. C. Young — Computers improve understanding of dynamic matching of inlet duct airflow with engine airflow for supersonic aircraft ..... May 46
DAVIS, J. E. and R. C. Curry — The cost of landing an airplane ..... Dec 47
DAWSON, D. W. — C. A. Amann and M. K. Yu — Conflicting demands beset designer of gasifier turbines ..... Fe 67
DAWSON, DAVID W. — Charles A. Amann and Mason K. Yu — Rim cracking in turbine discs can be eliminated .... Ap 92
DeBLUMENTHAL, M. P. and E. J. Hardig — Some problems in designing the Avanti ..... Mr 52
DeBLUMENTHAL, M. P. — E. J. Hardig — J. L. Winge and R. H. Vansteenkiste — What it takes to adapt caliper disc brakes to American cars ..... June 33
DECHANT, D. H. — Prime power choice for missile support . Jan 98
DE LIBAN, R. — Driverless trains reduce handling costs .... Fe 77
DEMARCHI, J. N. — Integral union cuts weight, size, failures ..... Nov 102
DENNING, R. E. and S. L. Rice — Rollers fatigue-tested in Caterpillar studies ..... Ap 104
DENNING, R. M. — Single-engine can meet subsonic cruise conditions ..... Fe 131
DE WEESE, J. L., John Conley, G. L. MacPherson, R. S. Mosher, Richard H. Sprince, and R. W. Wirta — CAMS concept integrates man and machine ..... Nov 65
DIBERT, CLAIR G. and William M. Fairhurst — New procedure simplifies axle noise evaluation ..... July 68
DIMITROFF, E. — J. V. Moffitt and R. D. Quillian — New technique predicts sludging ..... Mr 86
DOUGLAS, D. L. and H. A. Liebhafsky — Fuel cells progress toward commercial applications ..... Aug 30
DOUGLAS, ROBERT L. — Getting the most for the money in shop space for common carriers ..... Dec 44
DOYLE, W. P., C. J. Henry, and P. R. Thomas — Transmission squawk traced to clutch-plate adsorption ..... Nov 80
DRAKE, R. E. and F. S. Snyder — First fiberglass plane design ..... Mr 72
DREAVER, T. E. — Instrument to measure how people drive their vehicles ..... July 56
DRESSER, D. L. — Meredith C. Gourdine and Harold M. Larsen — Cool plasma lifts hopes for MGD space power .. Oct 58
DUNNE, C. J. and R. W. Burke — Ignition system features electronic triggering ..... July 100
DURELLA, M. J. — D. G. Wallace and J. R. Kelley and N. J. Musil — Look for trouble when engine parts get too hot ..... Ap 93
DYSART, W. D. and J. H. Freeman, Jr. — Schlamann stratified-charge engine could be great ..... Nov 60
DYSTE, N. L. — Tubular heat exchangers recuperate turboprop engines ..... Mr 82

E

EARNEST, S. A. — Key to successful adhesive of truck bodies ..... Fe 75
EASON, WILLIAM R. — Faster risetimes key to better ignition ..... May 130
EBERHART, J. D. and Aubrey Stone — Multiple engines improve SFC gas turbines at part load ..... June 109
EBERSOLE, GEORGE D, P. S. Myers, O. A. Uyehara, N. J. Wienke — Two tools to help diesel engines beat the heat ... Se 49
EBERT, J. W. — Improving GEM vehicle performance flexible understructures offers means to increase obstacle clearance while reducing installed power ..... May 60
EGELAND, M. C., Heavy duty cooling ..... Se 64
ELKINS, A. O. and S. F. Williams — Powered-axle concept gives army mobile, multipurpose vehicles ..... May 90
EL-WAKIL, M. M. and M. I. Abdou — Ignition delay analyzed from self-ignition of fuel drops ..... May 42
ERICKSON, M. and R. Batchelor — 5-step outline for designing load-carrying members ..... Jan 95
EVANS, PETER B. and Donald C. Gleason — Temporary wax coatings to protect car finish require special formulation ..... July 132

F

FAIRCHILD, DANIEL — Rating system helps to evaluate fuel filters ..... Oct 110
FAIRCHILD, DANIEL — Advances made in lube oil filtration ..... Oct 112

FAIRHURST, WILLIAM M. and Clair G. Dibert — New procedure simplifies axle noise evaluation ..... July 68
FELT, A. E., A. V. Cabal, and H. A. Williams, Jr. — Leaded LP-gas gives high knock-limited power in recent lab tests ..... Nov 103
FERRE, C. E. and D. C. Lenkaitis — System applies new method to gas turbine fuel control ..... Nov 102
FIEDLER, L. F. — Albert Brunner — R. A. Goepfrich — S. G. Tilden, Jr. — Harold E. Fuerst and Clark R. Lupton — SAE introduces recommended practice for testing bonding quality of bonded brake shoes ..... Aug 47
FINK, F. W. — Tomorrow' better materials ..... Fe 26
FIORITI, IVO — John Vasta and Alan Starr — BUSHIPS finds 4 materials promising for hydrofoils ..... May 90
FISHER, GEORGE — Intake manifold torch helps "cold-start" diesels ..... June 132
FORKOIS, HAROLD M. — Machine simulates rough road for wheeled vehicles ..... June 105
FORTE, L. R. — Europe does more fabrication R & D ..... Aug 52
FRANCIA, G. — Collector gathers solar energy ..... Mr 84
FRANK, R. K. — E. R. Larges and A. Schneider — Devices protect ignition transistors ..... May 92
FRANTZ, W. — Cleanliness requirements for hydraulic fluids become unrealistic ..... Mr 88
FREEMAN, J. H. JR., and W. D. Dysart — Schlamann stratified-charge engine could be great ..... Nov 60
FREITAG, D. R. — R. B. Harrison — R. A. Liston — T. J. Bischoff — R. W. Gerdel — J. J. Murray — S. J. Knight and C. E. Robertson, Jr. — Better specifying seen as basis for improved Army vehicle mobility ..... Jan 58
FROEDE, WALTER — First rotary combustion engine powers NSU spider ..... Nov 52
FUERST, HAROLD, E. — S. G. Tilden — L. F. Fiedler — Albert Brunner — R. A. Goepfrich and Clark R. Lupton — SAE introduces recommended practice for testing bonding quality of bonded brake shoes ..... Aug 47
FULLER, DUDLEY D. — New bearing handles heavy loads with precision ..... Dec 90
FUNG, Y. C. — M. V. Barton and D. Young — Parameter use simplifies analysis of non-linear response to shock .. July 130
FURBY, N. W. and J. S. McClure — 20 parameters for selecting hydraulic fluids ..... Oct 46

G

GADBERRY, H. M. — Industry is invited to feed on NASA byproducts ..... Mr 54
GAGOLA, L. J. — C. R. Wilks and J. W. McCrown — Braze alloys evaluated for refractory metal sandwich structures ..... July 137
GALSTER, GEORGE M. — Transistorized ignition has benefits and limitations ..... Ap 87
GANGNATH, R. B. and W. H. White — Optimum hydraulic accumulator design includes real gas effects ..... Aug 68
GARRISON, J. M. — Communications is the key to the human-nature guidance necessary to management control ..... Nov 54
GASTON, G. E. and J. J. Thomas — Tests disclose sources of fuel filter clogging ..... Fe 63
GAUTHEY, LT. J. R. and Capt. R. E. Stark — Hydro-skimmer floats on air ..... Oct 113
GEHRES, E. — New studies help predict coolant performance in cars ..... July 51
GENET, W. A. — Computer tells way to turn part from bar stock ..... Fe 88
GERDEL, R. W. — R. A. Liston — R. B. Harrison — T. J. Bischoff — J. J. Murray — D. R. Freitag — S. J. Knight and C. E. Robertson, Jr. — Better specifying seen as basis for improved Army vehicle mobility ..... Jan 58
GILL, W. R. — A. W. Cooper, G. E. Vanden Berg, and C. A. Reeves — Plow, soil type define soil breakup energy needs ..... Se 88
GILLOOLY, R. P. — J. Zaborsky — W. J. Luedde and M. J. Wendl — Computer filters feedback for better booster control ..... Oct 49
GLASSCO, J. B., S. R. Valluri, G. E. Bockrath — Crack propagation theory modified ..... Dec 84
GLEASON, DONALD C. and Peter B. Evans — Temporary wax coatings to protect car finish require special formulation ..... July 132
GOBEN, K. W. and W. J. Sette — Input motion characteristics can predict equipment damage ..... June 132
GOEPFRICH, R. A. — Albert Brunner — L. F. Fiedler — S. G. Tilden, Jr. — Harold E. Fuerst and Clark R. Lupton — SAE introduces recommended practice for testing bonding quality of bonded brake shoes ..... Aug 47
GOGGIN, MARGARET F. — Incoming inspection cuts semiconductor failures ..... Oct 112
GONZALEZ, J. I. and T. E. Chappell — Missile flight is short but hot ..... Jan 86
GORRY, L. J. Jr. — Rating engines oils with greater accurracy ..... July 101
GOURDINE, MEREDITH C. — Harold M. Larsen and D. L. Dresser — Cool plasma lifts hope for MGD space power .. Oct 58
GRAHAM, G. R. — Bruce W. Klein — Frank H. Highley — Earl W. Reinsch and C. S. Batchelor — Powder metal brake linings eliminate fade, engineers say — ..... June 44
GRAHAM, J. A. — D. R. Olberts and L. C. Wolf — Fatigue calculations made easy ..... Oct 60
GRAVES, G. L. and R. S. Carleton — Gas turbines drive special high-speed naval craft ..... July 70
GRAY, W. P. and D. L. Linderman — Honeycomb tailpipe saves weight in C-141 ..... Dec 83
GREENEWALD, HERBERT, Jr., and Thomas J. Riley — New superalloy sheets feature high-temperature strength .. Dec 56
GRIFFIN, EUGENE L. — "Cool" lights or hot cabins — SST alternates ..... July 33
GROSS, M. R. — Low-cycle flexural fatigue studies aid designer of complex metal structures ..... May 130
GRUNDER, L. J. and P. H. Schweitzer — Improvements with hybrid Otto-diesel engines ..... Jan 100
GUNNAR, KEITH — Rain repellent boosts 727 visibility .. Oct 68
GUTZWILLER, WALTER R. — Tool measures piston temperature of diesels ..... May 83

H

HALL, C. A. — J. B. Retzloff and S. M. Collegeman — New high-temperature test rates oxidation stabilities of aircraft additive oils ..... Aug 88
HALLIGAN, E. C. — Designer aids to satisfactory high-strength, thin-wall, gray iron castings ..... May 70
HAMILTON, W. I. — How one manufacturer tailored an engine to a tractor and to a loader ..... Nov 92
HANSON, W. W. — LASER leads to new metal-removal techniques ..... Jan 103
HARDIG, E. J. and M. P. DeBlumenthal — Some problems in designing the Avanti ..... Mr 52
HARDIG, E. J. — J. L. Winge — R. H. Vansteenkiste and M. P. DeBlumenthal — What it takes to adapt caliper disc brakes to American cars ..... June 33
HARDIN, M. C. — Donald E. Pollock and Thomas R. Bundorf — Analog model helps lower wind disturbances ..... Oct 36
HARDY, RODNEY D. and Richard P. White — Army tracked vehicle expands multipurpose concept ..... Ap 65
HARKINS, T. R. — J. B. Hill and W. G. Renshaw — Three steps to arrest body and molding corrosion ..... July 34
HARNED, MALCOLM and H. O. Nay — Hot-cycle compound helicopter design has novel features ..... Dec 36
HARRIS, J. T. — Metallic cloth new space material ..... Mr 84
HARRIS, K. J. and J. K. Jensen — 20 practical pointers for tractor powershift transmission — designers ..... Dec 40
HARRISON, R. B. — R. A. Liston — T. J. Bischoff — R. W. Gerdel — J. J. Murray — D. R. Freitag — S. J. Knight and C. E. Robertson, Jr. — Better specifying seen as basis for improved Army vehicle mobility ..... Jan 58
HART, GLEN D. — To get high-cost items out of new designs, make every man a value engineer ..... Nov 76
HARTING, G. R. — 8 facts as basis for clutch design ..... Fe 64
HARTING, G. R. — How to design clutches ..... Mr 45
HARTING, G. R. — How to design •electromagnetic single-plate dry-type • mechanically actuated wet-type ..... Ap 76
HARTING, G. R. — How to design • hydraulic multiple-disc • electromagnetic multiple-disc clutches ..... May 73
HARVIE, R. E. and H. A. Kahler — Bumper corrosion reduced by controls ..... Ap 134
HASS, G. C. and J. R. Scanlin — Spot the weak spots of pollution controls ..... Oct 102
HEINEN, CHARLES M. — Engine Modifications almost halve hydrocarbon and CO exhaust content, Chrysler studies indicate ..... Ap 84
HEITSHU, D. C. and K. V. Kirkpatrick — Closed-center hydraulics for tractors ..... Oct 74
HENKIN, ALEXANDER and Joseph Datsko — How to calculate machining speeds . . . from the physical properties of metals ..... July 63
HENRY, C. J., W. P. Doyle, and P. R. Thomas — Transmission squawk traced to clutch-plate absorption ..... Nov 80
HERMAN, W. J. and J. W. Blattenberger — Good maintenance essential to effective air emission system performance ..... July 101
HEYWORTH, A. J. and A. A. Lombard — Small liftjet designed for multi-unit use in VTOLs ..... June 107
HIATT, MELVIN A., Kenneth C. Plewes, and J. L. Copenhaver — 727 — Boeing's most reliable jet ..... Dec 52
HIBBARD, HALL L. — VTOL air bus slated for short hauls Oct 104
HIGHLEY, FRANK H. — C. S. Batchelor — Earl W. Reinsch — Bruce W. Klein and G. R. Graham — Powder metal brake linings eliminate fade, engineers say — June 44
HILL, J. B. — W. G. Renshaw and T. R. Harkins — Three steps to arrest body and molding corrosion ..... July 34
HOFSTATTER, ALFRED F. — Using marage steel for welded airframes ..... Nov 98
HOLLIDAY, F. R. — Allowable stress diagrams can help designers solve automotive strength problems ..... Ap 70
HORNER, C. E. — Value engineering at Ford saves dollars .. Mr 26
HORTON, J. H. — J. M. Clark and D. J. Skinner — Steel rail ring aids oil control ..... Jan 108
HORTON, J. H., J. E. Montgomery and W. F. McGovern — Multifuel capability sought for small gas turbines .... Nov 84
HOSTETLER, H. FRANKLIN and Robert H. Wright — Boron additive de-bugs diesel fuel ..... Ap 47
HUGGINS, H. D. and Nelson Jarrett, W. W. Schwid — Oil cooling medium must fit application ..... Dec 62
HULL, W. L. — Dieseis can be built to give 1 Bhp per cu. in. ..... May 95

HUNDAL, M. S. — Friction "linearization" aids valve motion study ..... June 106
HUSSMAN, A. W. — F. Kahoun and R. A. Taylor — Fuel injection into swirling air is practical stratification system ..... Ap 56
HUZEL, D. K. — The saturn-II stage — a progress report .. Ap 85
HYKES, PAUL G. New formula predicts downhill braking .. June 51

I

IRWIN, D. E. — E. J. Manganiello — Cecil C. Tyrrell and Karl O. Wernath — Excellent individual achievement is key to progress ..... July 30

J

JANEWAY, ROBERT N. — Fast burn makes engines rough — in 1963 as in 1920's ..... May 67
JARRETT, NELSON and H. D. Huggins, W. W. Schwid — Oil cooling medium must fit application ..... Dec 62
JENKINS, GILBERT — Spectrometry speeds grease identification ..... Aug 37
JENSEN, D. A. — Vehicle smog control progresses in California ..... Jan 104
JENSEN, J. K. and K. J. Harris — 20 practical pointers for tractor powershift transmission designers ..... Dec 40
JINDRA, F. — Scale model helps solve steering problems .... Mr 33
JIRSA, E. F. — Hitch and quick coupler feature John Deere 5010 tractor ..... Fe 82
JOHNSON, G. I. — Computers help design valve trains .... Mr 30
JOHNSON, J. H. and G. L. Borman — Single drop theory used to appraise injection against swirl in diesels ..... Ap 57
JOHNSON, N. E. — Automatic systems check manufacturing cost and performance ..... Jan 103
JOHNSON, N. E. — Data processing equipment needed tomorrow ..... Mr 58
JONES, ROGER F. — Oleform modified polypropylene . . . new automotive plastic ..... Ap 90

K

KAESSER, M. L. and H. N. Maier — Photoelastic plastics aid redesign ..... Oct 107
KAHLER, H. A. and R. E. Harvie — Bumper corrosion reduced by controls ..... Ap 134
KAHOUN, F. — A. W. Hussman and R. A. Taylor — Fuel injection into swirling air is practical stratification system ..... Ap 56
KALANGE, M. A. and V. R. Neiland — Fluid flight control system on tap for Saturn ..... May 62
KAPLAN, ELI and F. D. Linzer — Project FIRE blazes trail for Apollo re-entry ..... Dec 76
KAUFMAN, V. R. and N. C. Woelffer — How to lower oil-to-fuel ratio and lift performance of two-stroke engines .. Aug 78
KEENAN, C. H. — 9.5 mills/kwh power cost a Yankee atomic plant ..... Mr 87
KELLEY, WAYNE B. — Where automotive engineers sit with urethane foam ..... Oct 63
KELLY, J. R. — M. J. Durella — D. G. Wallace and N. J. Musil — Look for trouble when engine parts get too hot .. Ap 93
KERLEY, R. V. and B. Brewster — High temperatures trigger preignition ..... Dec 86
KESSLER, F. J. — R. E. Kottmeyer — R. G. Tweed and E. M. Smoley — Creep causes torque loss in flat face gasketed joint assemblies ..... May 85
KING, JOHN L., and E. J. Richards — Ford mobile fuel laboratory makes possible testing where weather suits .... Nov 96
KIRKPATRICK, K. V. and D. C. Heitshu — Closed-center hydraulics for tractors ..... Oct 74
KITTLER, MILTON J. — How an engineer can cope with galloping technology ..... Ap 35
KLEIN, BRUCE W. — C. S. Batchelor — Earl W. Reinsch — Frank H. Highley and G. R. Graham — Powder metal brake linings eliminate fade, engineers say — ..... June 44
KLEINER, W. B. and L. A. Williams — Electrochemical machining — when and how to use it ..... July 94
KLOSS, DANIEL, C. and Fred L. Main — Fatigue life found from static tests ..... Se 86
KNIGHT, S. J. — R. B. Harrison — R. A. Liston — T. J. Bischoff — R. W. Gerdel — J. J. Murray — D. R. Freitag and C. E. Robertson, Jr. — Better specifying seen as basis for improved Army vehicle mobility ..... Jan 58
KNIGHTON, C. L. and R. J. Marshall — Designing front suspensions an approach to get systems compatible with frame-body or unitized structures ..... June 46
KNOLL, A. H., E. H. Spuhler, G. W. Stickley — Aluminum alloys OK for Mach 2.5 ..... Dec 42
KNOPF, MILTON — Future flight controls: hydraulic or mechanical? ..... Dec 92
KOEHRING, R. P. — Powder metallurgy advances ..... Fe 39
KORFF, W. H. — Streamlining bodies will pay dividends .... Mr 78
KOTH, W. P. — Customer-vendor teamwork leads to reliability gains ..... Dec 35
KOTTMEYER, R. E. — F. J. Kessler — R. G. Tweed and E. M. Smoley — Creep causes torque loss in flat face gasketed joint assemblies ..... May 85
KRAUS, G. — CW engineers design uncooled pyrolytic graphite nozzles ..... Jan 81
KRONOGARD, S. O. — Volvo-matic a new automatic geared turbine transmission from Sweden ..... Ap 38
KUTCHERA, R. E. — K. J. Miller and G. V. Anderson — Electron beam welding — soon a production process ..... Jan 62

L

LANDEN, EARNEST, W., Nitrogen oxides — diesel villain .... Se 70
LARGES, E. R. — R. K. Frank and A. Schneider — Devices protect ignition transistors ..... May 92
LARSEN, HAROLD M. — Meredith C. Gourdine and D. L. Dresser — Cool plasma lifts hopes for MGD space power Oct 58
LAWRENCE, L., JR. and P. W. Lett — Moon exploration in a vehicle built for two ..... Fe 46
LAWRENCE, WILLIAM C. — Airlines need new order of reliability — a major airline V. P. tells how to get it .... June 42
LAWSON, G. C. — R. I. Potter and G. Puia — 2-stage depth filter change interval ..... Fe 83
LENKAITIS, D. C. and C. E. Ferre — System applies new method to gas turbine fuel control ..... Nov 102
LESSER, R. H. — New filtering concept seen as solution to hydraulic system contamination ..... Jan 73
LETT, P. W. and L. Lawrence, Jr. — Moon exploration in a vehicle built for two ..... Fe 46
LIEBHAFSKY H. A. and D. L. Douglas — Fuel cells progress toward commercial applications ..... Aug 30
LINDERMAN, D. L. and W. P. Gray — Honeycomb tailpipe saves weight in C-141 ..... Dec 83
LINZEI, F. D. and Eli Kaplan — Project FIRE blazes trail for Apollo re-entry ..... Dec 76
LIPOW, MYRON and D. K. Lloyd — Last ounce of rocket thrust may cost dearly in reliability ..... June 79
LISTON, R. A. — R. B. Harrison — T. J. Bischoff — R. W. Gerdel — J. J. Murray — D. R. Freitag — S. J. Knight and C. E. Robertson, Jr. — Better specifying seen as basis for improved Army vehicle mobility ..... Jan 58
LLOYD, D. K. and Myron Lipow — Last ounce of rocket thrust may cost dearly in reliability ..... June 79
LOGUE, R. L. — Body engineering from model T to T-Bird a profession still expanding in importance and scope .... May 48
LOMBARD, A. A. and A. J. Heyworth — Small liftjet designed for multi-unit use in VTOLs ..... June 107
LOMBARDO, SYLVESTER — Liquid-metal coupled regenerator can be adapted to aircraft turboshaft engine ..... July 58
LOVRENICH, R. T. — Electronics spark better use of time-honored ignition principles ..... July 48
LUEDDE, W. J. — R. P. Gillooly — J. Zaborsky and M. J. Wendl — Computer filters feedback for better booster control ..... Oct 49
LUNN, R. C. — Hows and whys in design of Ford's Mustang ..... May 57
LUPTON, CLARK R. — Harold E. Fuerst — S. G. Tilden — L. F. Fiedler — Albert Brunner and R. A. Goepfrich — SAE introduces recommended practice for testing bonding quality of bonded brake shoes ..... Aug 47
LYMAN, W. STUART — Guidelines for selecting a high-energy-rate forming system ..... Ap 88

M

MACK, M. J. — Shuttle shift design is key to industrial vehicle transmission ..... June 82
MacPHERSON, G. L., John Conley, J. L. De Weese, R. S. Mosher, Richard H. Sprince and R. W. Wirta — CAMS concept integrates man and machine ..... Nov 65
MADONO, OSAMU — Shaw process permits precision casting of press tools and forging dies ..... June 96
MAHONEY, J. J. — High-performance inlets for high Mach numbers ..... Mr 74
MAIER, H. N. and M. L. Kaesser — Photoelastic plastics aid redesign ..... Oct 107
MAIN, FRED, L. and Daniel C. Kloss — Fatigue life found from static tests ..... Se 86
MAITRE, J. L., J. M. Belanger — Mothballing vehicles for outdoor storage ..... Se 74
MANGANIELLO, E. J. — Cecil C. Tyrrell — Karl O. Wernath and D. E. Irwin — Excellent individual achievement is key to progress ..... July 30
MARKOW, E. G. — Elastic wheel seen good for lunar vehicles ..... May 132
MARKS, CRAIG and Jerar Andon — Engine noise reduction gives more mechanical octanes ..... May 89
MARKUSSEN, BJORN H. — How to estimate piston crown temperature ..... May 97
MARMORINE, M. O. — What's wanted for tractors in 1970 .. Fe 52
MARSHALL, R. J. and C. L. Knighton — Designing front suspensions an approach to get systems compatible with frame-body or unitized structures ..... June 46
MARSHALL, WILLIAM A. and R. J. Benzing — New capabilities predicted soon in fluids for hydraulic system use .. Aug 74
MARTIN, G. W. and A. R. Ortell — Using ejectors improves GEM efficiency ..... Jan 97
MASON, K. YU — Charles A. Amann and David W. Dawson — Rim cracking in turbine discs can be eliminated ..... Ap 92
MASTER, W. R. — Remote controls for tractors and construction vehicles ..... Fe 78
MATHER, J. M. — Allis-Chalmers lifts diesel tractor performance ..... Fe 82
MAYER, W. — Tractor design problems met ..... Jan 97

MAYERNICK, ROBERT and Donald R. Vance — Intercooling benefits vary in open precombustion chamber diesels .. Dec 50
McCAFFERTY, R. L. — J. F. Wagner and W. A. P. Meyer — Antiknock performance clocked on turbocharged engines of Corvair and Oldsmobile ..... Aug 92
McCLELLAND, R. P. and A. H. Zoll — Breakerless high-frequency ignition system developed for aircraft piston engines ..... July 74
McCLURE, J. S. and N. W. Furby — 20 parameters for selecting hydraulic fluids ..... Oct 46
McCOWN, J. W. — C. R. Wilks and L. J. Gagola — Braze alloys evaluated for refractory metal sandwich structures July 137
McCUNE, F. K. — Creative designer needs three information inputs, says GE Vice President — Engineering ..... May 36
McEWEN, EWEN — Designing tractors for the world market Oct 71
McFADDEN, M. F. — European interest in standardization ... Fe 50
McGLADE, WAYNE, H. — Recent transmissions designed for off-highway needs ..... Se 44
McGOVERN, W. F., J. H. Horton, and J. E. Montgomery — Multifuel capability sought for small gas turbines ..... Nov 84
McGOWAN, P. R. — Charts speed preliminary design of airframe structures subject to acoustic stresses ..... July 55
McINTOSH, RICHARD, Marshall D. Sawdey, William Norlander, E. Ryan Backofen — Hydraulic cylinder design influenced by, environment, system pressure, force requirements ..... Nov 68
McLEAR, Paul — Marion D. Smith — Jack W. Schmidt — David K. Thomas and James A. Mitchner — 5 Young engineers give their own answers to: "what is your job at Allison?" ..... June 86
McMAHAN, R. G. — No "best" fuel yet made for racing engines ..... Ap 84
McNAMARA, T. V., and E. A. Richards — New automatic transient control shifts jaw-clutch transmission ..... Se 45
McWILLIAMS, BAYARD T. — Army specifies aircraft instrumentation needs ..... July 99
MEADE, FRANCIS S. and George P. Murphy, Jr. — New capabilities seen for resin-bonded dry film lubes ..... May 98
MECKEL, NELSON T. and R. D. Quillian, Jr. — U. S. Army fuels and lubricants research laboratory ..... May 94
METCALF, W. H. — Tire's side force response depends on distance rolled ..... Aug 95
METZGER, GERSHON — Sludge formation doesn't indicate engine cleanliness ..... Nov 51
MEYER, W. A. P. — R. L. McCafferty and J. F. Wagner — Antiknock performance clocked on turbocharged engines of Corvair and Oldsmobile ..... Aug 92
MILLAR, G. H. — Surface gap ignition opens way to raise bmep of 2-stroke-cycle engines ..... Dec 85
MILLER, H. R. and W. H. Safranek — Paint die castings immediately after cleaning for good adherence properties . May 98
MILLER, K. J. — G. V. Anderson and R. E. Kutchera — Electron beam welding — soon a production process ..... Jan 62
MITCHNER, JAMES A. — Paul McLear — Marion D. Smith — Jack W. Schmidt and David K. Thomas — 5 Young engineers give their own answers to: "what is your job at Allison?" ..... June 86
MOEN, WALTER K. — Use thermocouples right and melt away weight ..... Nov 58
MOFFITT, J. V. — E. Dimitroff and R. D. Quillian — New technique predicts sludging ..... Mr 86
MOISE, J. C. and D. E. Price — The M-1 rocket engine — 1,500,000 pounds of thrust ..... June 72
MONTGOMERY, J. E., J. H. Horton and W. F. McGovern — Multifuel capability sought for small gas turbines ..... Nov 84
MOON, H. L. — Programmed instruction faster than lecture-study methods ..... Fe 73
MORRISON, ROBERT S. — 100 Avanti body parts produced from molded fiber glass ..... Oct 66
MOSHER, R. S., John Conley, J. L. De Weese, G. L. MacPherson, Richard H. Sprince, and R. W. Wirta — CAMS concept integrates man and machine ..... Nov 65
MOSS, B. B. — "Roll-and-weld" technique fabricates rocket engine cases ..... Jan 137
MOULTON, J. B. — 140 trained engineering technicians making progress at du Pont ..... Oct 30
MURPHY, GEORGE P., JR. and Francis S. Meade — New capabilities seen for resin-bonded dry film lubes ..... May 98
MURRAY, C. A. and G. H. Sherrard — Reinforced plastics — materials ..... June 66
MURRAY, J. F. — Regular checks help keep room clean .... Nov 57
MURRAY, J. J. — R. B. Harrison — R. A. Liston — R. W. Gerdel — D. R. Freitag — S. J. Knight and C. E. Robertson, Jr. — Better specifying seen as basis for improved Army vehicle mobility ..... Jan 58
MURTHY, B. S. and Ivan Baxter — Bi-fuel engines offer economic advantages where vegetable oils abound ..... Ap 84
MUSIL, N. J. — M. J. Durella — D. G. Wallace and J. R. Kelly — Look for trouble when engine parts get too hot ... Ap 93
MYERS, P. S., George D. Ebersole, O. A. Uyehara, H. J. Wienke — Two tools to help diesel engines beat the heat .. Se 49
MYERS, P. S., and John K. Adadevoh, O. A. Uyehara — Why's of diesel combustion fathomed ..... Se 91

N

NAY, H. O. and Malcolm Harned — Hot-cycle compound helicopter design has novel features ..... Dec 36
NEBIKER, F. R. — Inflatable decelerator developed for re-entering space capsules ..... June 101
NEFF, WILLIAM J. — Where GEMs fit in the transportation scheme ..... Oct 32
NEILAND, V. R. and M. A. Kalange — Fluid flight control system on tap for Saturn ..... May 62
NEILD, A. BAYNE, Jr. — 500-W portable thermoelectric unit may come within 2 years ..... Ap 32
NEIN, M. E. — G. K. Platt — J. L. Vaniman and C. C. Wood — Propellant feed system optimization depends on choice of (1) LOX tank location; (2) bulkhead configuration .. Aug 64
NEWMAN, P. and D. S. Smith — Oils for European 2-stroke engines studied ..... July 121
NEWTON, C. T. — 18 aids to subzero starting of diesels .. June 107
NORDEEN, D. L. and A. D. Cortese — Small differences in tire properties = large differences in vehicle handling .... July 83
NORLANDER, WILLIAM, Marshall D. Sawdey, Richard McIntosh, and E. Ryan Backofen — Hydraulic cylinder design influenced by environment, system pressure, force requirements ..... Nov 68
NOTHSTINE, J. R. and F. N. Beauvais — New lab studies predict tire cornering forces ..... Nov 94
NOVAS, P. — Tractor engine power monitored by analog simulation ..... Fe 70

O

O'BRIEN, M. J. — Metal casting advances cited ..... Jan 135
OGLESBY, N. P. — Remote radio control of tractors on the way ..... Fe 80
OKAMURA, KENJI — Big diesel runs smoothly ..... July 102
OKUBO, H. S. — C. E. Albertson — Lube effects vary in clutch lining friction performance ..... Ap 134
OLBERTS, D. R. — J. A. Graham and L. C. Wolf — Fatigue calculations made easy ..... Oct 60
OLSON, WALTER T. — What can civilian industry get from space-oriented R&D? ..... Aug 61
ORTELL, A. R. and G. W. Martin — Using ejectors improves GEM efficiency ..... Jan 97

P

PALSULICH, JOSEPH M. — High energy forging — new production tool ..... June 104
PARR, L. W. — How Chrysler evaluates windshield surfaces July 42
PATTON, WALTER G. — 1964 passenger car engineering trends ..... Nov 30
PAULL, D. A. and J. B. Radtke — Bore, not rings could start trouble in small engines ..... Mr 91
PECHENIK, J. — Special problems solved in designing corvair-spyder camshaft ..... Ap 82
PENNY, N. — Rover's turbine engine heat exchanger ..... Fe 34
PENNY, N. — Rover's newest gas turbine car ..... Mr 63
PERKINS, C. M. — Twin countershaft transmission saves size and weight ..... Se 38
PETERS, R. I. — Proper primer use minimizes automobile body corrosion ..... June 102
PHILIP, G. O. — Autoprod — a systems concept integrated from idea to customer ..... May 99
PIERCE, WILLIAM G. — Quiet and comfort cost more with integral construction ..... July 47
PIERRO, J. J. — High temperature electrical systems ..... Mr 90
PLATT, G. K. — M. E. Nein — J. L. Vaniman and C. C. Wood — Propellant feed system optimization depends on choice of (1) LOX tank location; (2) bulkhead configuration ..... Aug 64
PLEWES, KENNETH C., J. L. Copenhaver, and Melvin A. Hiatt — 727 — Boeing's most reliable jet ..... Dec 52
PLOVICK, F. P. — Troubleshooting A-C charging systems .. Aug 84
PLOVICK, FRANK P. — Manufacturer training centers aid to better fleet maintenance ..... Dec 90
POLLARD, F. H. — Hydraulic components tested at 1000 F Oct 108
POLLOCK, DONALD E. — Thomas R. Bundorf and M. C. Hardin — Analog model helps lower wind disturbances on cars ..... Oct 36
POTTER, R. I. — G. C. Lawson and G. Puia — 2-stage depth filter allows longer filter change interval ..... Fe 83
POTTER, W. T. and Scott Rethorst — Channel flow supports MARAD GEM ..... Oct 106
POYNS, F. R. — Direct operating costs of airlines ..... Dec 59
PRADCO, F. — Computer simulates vehicle suspension systems ..... Ap 44
PRETZ, P. H. — An engineer's view of "local content" ..... Mr 34
PRICE, D. E. and J. C. Moise — The M-1 rocket engine — 1,500,000 pounds of thrust ..... June 72
PRITZLAFF, JOHN A. — Single-purpose, unmanned vehicles conceived for underwater exploration ..... Ap 66
PUIA, G. — G. C. Lawson and R. I. Potter — 2-stage depth filter allows longer filter change interval ..... Fe 83
PUTANSU, R. J. and R. L. Courtney — Chevrolet cranks hot and cold engines ..... Dec 79

Q

QUILLIAN, R. D. — E. Dimitroff and J. V. Moffitt — New technique predicts sludging ..... Mr 86
QUILLIAN, R. D., Jr. and Nelson T. Meckel — U. S. Army fuels and lubricants research laboratory ..... May 94

R

RABIDEAU, GERALD F. — Enter the "human factors specialist" . . . new necessity in systems designing ..... Ap 86
RADTKE, J. B. and D. A. Paull — Bore, not rings could start trouble in small engines ..... Mr 91
RAYMOND, LEONARD — Technical developments sparking astonishing European automotive growth ..... Oct 64
REAVES, C. A., A. W. Cooper, W. R. Gill, G. E. Vanden Berg — Plow, soil type define soil breakup energy needs ... Se 88
REDICK, D. C. — For heavy-duty vehicles good cranking system design depends on estimating procedures, cold cranking tests ..... Se 52
REDICK, D. C. — "Pick 'em right!" — and equipment packages will meet vehicle electrical load demands ..... Se 83
REDMOND, J. H. — F. W. Bott and G. H. Caine — Coolants boost motor horsepower ..... Oct 78
REED, I. F. and G. E. Vanden Berg — Tests tire effect on tractor traction ..... Fe 77
REINSCH, EARL W. — C. S. Batchelor — Frank H. Highley — Bruce W. Klein and G. R. Graham — Powder metal brake linings eliminate fade, engineers say ..... June 44
RENSHAW, W. G. — J. B. Hill and T. R. Harkins — Three steps to arrest body and molding corrosion ..... July 34
RETHORST, SCOTT and W. T. Potter — Channel flow supports MARAD GEM ..... Oct 106
RETZLOFF, J. B. — C. A. Hall and S. M. Collegeman — New high-temperature test rates oxidation stabilities of aircraft additive oils ..... Aug 88
RHODES, J. E. — Transducers measure transient motion in shock tests ..... Aug 96
RICE, S. L. and R. E. Denning — Rollers fatigue-tested in caterpillar studies ..... Ap 104
RICHARDS, E. A., and T. V. McNamara — New automatic transient control shifts jaw-clutch transmission ..... Se 45
RICHARDS, E. J., and John L. King — Ford mobile fuel laboratory makes possible testing where weather suits .... Nov 96
RICHARDSON, W. G. and W. Butterwood — Hauling liquids in plastic tanks now feasible ..... Fe 76
RICHEY, S. C. and P. C. Bowser — What makes a "good handling" car? ..... July 98
RICHEY, S. C. and P. C. Bowser — Two of new Riviera design features ..... July 122
RILEY, THOMAS J. and Herbert Greenewald, Jr. — New superalloy sheets feature high-temperature strength ..... Dec 56
ROBERTSON, C. E., JR. — R. B. Harrison — R. A. Liston — T. J. Bishcoff — R. W. Gerdel — J. J. Murray — D. R. Freitag and S. J. Knight — Better specifying seen as basis for improved Army vehicle mobility ..... Jan 58
ROENSCH, M. M. — 3 unfilled lube and fuel needs ..... Fe 30
ROEPCKE, F. A. — Rotating combustion engine is well suited to aircraft use ..... May 82
ROLLWITZ, WILLIAM L. and John M. Clark, Jr. — Apparatus measures torsional vibration of small engines .... May 92
ROUX, N. R. — D. Borden and C. M. Stendahl — Formulating automatic transmission fluids ..... Mr 84
RYAN, J. G. — L. B. Scott and J. B. Baker — Low-ash oils help against runaway surface ignition ..... Jan 101

S

SAFRANEK, W. H. and H. R. Miller — Paint die castings immediately after cleaning for good adherence properties . May 98
SAWDEY, MARSHALL D., Richard McIntosh, William Norlander, E. Ryan Backofen — Hydraulic cylinder design influenced by, environment, system pressure, force requirements ..... Nov 68
SCANLIN, J. R. and G. C. Hass — Spot the weak spots of pollution controls ..... Oct 102
SCHAECHTER, WOLFGANG — Insulation cuts liquid hydrogen boil-off losses ..... Nov 82
SCHAFFER, D. J. and C. B. Sung — Dynamic control systems Mr 36
SCHMIDT, JACK W. — Marion D. Smith — Paul McLear — David K. Thomas and James A. Mitchner — 5 young engineers give their own answers to: "what is your job at Allison? ..... June 86
SCHNEIDER, A. — R. K. Frank and E. R. Larges — Devices protect ignition transistors ..... May 92
SCHOLFIELD, C. M. — Rear suspension isolation — how best to accomplish it ..... Ap 68
SCHWARTZBART, H. — Metal-fiber-reinforced ceramics extend tensile-loading capabilities ..... Fe 80
SCHWEITZER, P. H. and L. J. Grunder — Improvements with hybrid Otto-diesel engines ..... Jan 100
SCHWID, W. W. and H. D. Huggins, Nelson Jarrett — Oil cooling medium must fit application ..... Dec 62
SCHWINGHAMER, R. J. — Electro-hydraulic and magnetic forming — two new processes for shaping metals ..... July 97
SCOTT, L. B. — J. G. Ryan and J. B. Baker — Low-ash oils help against runaway surface ignition ..... Jan 101
SCOTT, R. H. — Dual tires run cooler than singles on off-highway vehicles ..... Oct 110
SETTE, W. J. and K. W. Goben — Input motion characteristics can predict equipment damage ..... June 132
SHAPPELL, C. E. — Electrical interference must be designed out of transport aircraft ..... June 54
SHAW, R. R. — The supersonic transport — an international airline takes a look ..... June 30
SHEALY, N. A., Singer, R. B., Stevenson, W. L. — Why farm tractors go four-wheel drive ..... Sept 60
SHEARER, J. L. — When designing space components, think small ..... Fe 129
SHERRARD, G. H. and C. A. Murray — Reinforced plastics — materials ..... June 66
SHINN, JEFFREY N. — No moving parts needed! fluid amplifiers perform electronic-like functions . . . without moving parts ..... Aug 38
SIELING, C., and Westenberg, H. E. — Agri-Robot — The automated plow ..... Se 36
SINGER, R. B., Shealy, N. A., Stevenson, W. L. — Why farm tractors go four-wheel drive ..... Se 60
SKEELS, PAUL C. — New crash test aids vehicle design .... Ap 75
SKINNER, D. J. — J. H. Horton and J. M. Clark — Steel rail ring aids oil control ..... Jan 108
SLAIBY, T. G. and R. L. Staubach — Supersonic transport performance boosted ..... Fe 42
SMITH, D. S. and P. Newman — Oils for European 2-stroke engines studied ..... July 121
SMITH, E. L. — Growth highlights T-74 engine development ..... May 54
SMITH, M. BRUCE and Samuel E. Susman — New easy-bonding adhesives retain toughness at −400 F ..... May 38
SMITH, MARION D. — Paul McLear — Jack W. Schmidt — David K. Thomas and James A. Mitchner — 5 young engineers give their own answers to: "what is your job at Allison?" ..... June 86
SMITH, P. A. — Electrostatic fluid filters supplement mechanical types ..... Mr 82
SMOLEY, E. M. — R. E. Kottmeyer — F. J. Kessler and R. G. Tweed — Creep causes torque loss in flat face gasketed joint assemblies ..... May 85
SNYDER, F. S. and R. E. Drake — First fiberglass plane design ..... Mr 72
SOBOLEWSKI, VAL — 3 techniques for creating a value analysis environment ..... Dec 65
SPANGLER, ROY V. and M. H. Sperling — Ashless detergent oil with EDB improves outboard engine operation .. Nov 103
SPERLING, M. H. and Roy V. Spangler — Ashless detergent oil with EDB improves outboard engine operation .. Nov 103
SPRINCE, RICHARD H., John Conley, J. L. De Weese, G. L. MacPherson, R. S. Mosher, and R. W. Wirta — CAMS concept integrates man and machine ..... Nov 65
SPUHLER, E. H., A. H. Knoll, G. W. Stickley — Aluminum alloys OK for Mach 2.5 ..... Dec 42
STARK, CAPT. R. E. and Lt. J. R. Gauthey — Hydroskimmer floats on air ..... Oct 113
STARR, ALAN — Ivo Floriti and John Vasta — BUSHIPS finds 4 materials promising for hydrofoils ..... May 90
STAUBACH, R. L. and T. G. Slaiby — Supersonic transport performance boosted ..... Fe 42
STEELE, M. C. and F. Weber — Precise speed control system demonstrated for recuperated gas turbine engine .... Nov 78
STEMPLE, W. K. — TUFFAK gains favor for convertible rear windows ..... Jan 103
STENDAHL, C. M. — D. Borden and N. R. Roux — Formulating automatic transmission fluids ..... Mr 84
STEVENSON, W. L., Singer, R. B., Shealy, N. A. — Why farm tractors go four-wheel drive ..... Se 60
STEWART, I. J. and P. R. Arzt — Part I — refractory metal properties — how they react to machining ..... Aug 34
STEWART, I. J. — P. R. Arzt — Part II — How to machine columbium and its alloys ..... Se 98
STEWART, I. J. and P. R. Arzt — Part III — How to machine molybdenum and its alloys ..... Oct 90
STEWART, I. J. and P. R. Arzt — Part IV — How to machine tantalum and its alloys ..... Nov 88
STEWART, I. J. and P. R. Arzt — Part V — How to machine tungsten and its alloys ..... Dec 70
STICKLEY, G. W., E. H. Spuhler, A. H. Knoll — Aluminum alloys OK for Mach 2.5 ..... Dec 42
STONE, AUBREY and J. D. Eberhardt — Multiple engines improve SFC gas turbines at part load ..... June 109
STONE, C. T. — CRC coker readied for stressing jet fuels ... Mr 80
STONE, C. T. — Fuel cokers can be used as quality control devices ..... Ap 91
STONEX, K. A. — A car engineer inspects state vehicle inspection techniques ..... June 75
STRINGHAM, R. H. — Douglas tests derive vibration modal data ..... Dec 83
STUDHALTER, W. R. — J-2 rocket engine design . . . dictated by liquid hydrogen fuel ..... July 52
SUNG, C. B. and D. J. Schaffer — Dynamic control systems .. Mr 36
SUSMAN, SAMUEL E. and M. Bruce Smith — New easy-bonding adhesives retain toughness at −400 F ..... May 38

T

TANIGUCHI, TAKEHARU and John Burnett — Designers and reliability specialists — here's how the twain can meet! ..... Oct 98
TARLOW, IRVING — Joseph W. Beaudet and Irving M. Weitzler — Army's sandpiper fork lift truck ..... Ap 36
TATOM, J. W. and R. Q. Boyles, Jr. — Careful design conserves cryogenics stored in near-earth orbit til rendezvous June 103
TAYLOR, R. A. — A. W. Hussman and F. Kahoun — Fuel injection into swirling air is practical stratification system Ap 56
TEAGUE, D. M. and P. J. Willson — Distributor caps evaluated by easy test ..... June 65

THOMAS, DAVID K. — Paul McLear — Jack W. Schmidt — Marion D. Smith and James A. Mitchner — 5 young engineers give their own answers to: "what is your job at Allison?" ..... June 86
THOMAS, J. J. and G. E. Gaston — Tests disclose sources of fuel filter clogging ..... Fe 63
THOMAS, P. R., W. P. Doyle, and C. J. Henry — Transmission squawk traced to clutch-plate adsorption ..... Nov 80
TILDEN, S. G., JR. — L. F. Fiedler — Albert Brunner — R. A. Goepfrich — Harold E. Fuerst and Clark R. Lupton — SAE introduces recommended practice for testing bonding quality of bonded brake shoes ..... Aug 47
TOCCO, A. J. — Fuel system cleanliness improved ..... Mr 69
TRENKA, A. R. and R. P. White — What makes a jet-flap helicopter rotor stable ..... Ap 50
TRISLER, WILLIAM — Rubber spring boosts driveline flexibility ..... Dec 88
TUCK, R. M., JR. — New transmission features simple design and better performance ..... Jan 74
TWEED, R. G. — F. J. Kessler — R. E. Kottmeyer and E. M. Smoley — Creep causes torque loss in flat face gasketed joint assemblies ..... May 85
TWEEDY, S. E. and P. J. Colburn — Electrical controls feasible for lift engines of VTOL craft ..... July 91
TYRRELL, CECIL C. — E. J. Manganiello — Karl O. Wernath and D. E. Irwin — Excellent individual achievement is key to progress ..... July 30

U

UYEHARA, O. A., George D. Ebersole, P. S. Myers, H. J. Wienke — Two tools to help diesel engines beat the heat .. Se 49
UYEHARA, O. A. and John K. Adadevoh, P. S. Myers — Why's of diesel combustion fathomed ..... Se 91

V

VALLURI, S. R., J. B. Glassco, G. E. Bockrath — Crack propagation theory modified ..... Dec 84
VAN DEUSEN, BRUCE D. — John Versace — Alfred D. Bosley and Herbert J. Bauer — There is some ground among ride improvement researchers . . . but there are plenty of differences too ..... June 68
VAN WINKLE, GLENN L. — Electroluminescent lamps improve aircraft instrument lighting ..... May 78
VANCE, DONALD R. and Robert Mayernick — Intercooling benefits vary in open and precombustion chamber diesels .. Dec 50
VANDEN BERG, G. E. and I. F. Reed — Tests tire effect on tractor traction ..... Fe 77
VANDEN BERG, G. E., Cooper, A. W., Gill, W. R., Reaves, C. A. — Plow, soil type define soil breakup energy needs ... Se 88
VANIMAN, J. L. — G. K. Platt — M. E. Nein and C. C. Wood — Propellant feed system optimization depends on choice of (1) LOX tank location; (2) bulkhead configuration ..... Aug 64
VANSTEENKISTE, R. H. — J. L. Winge — E. J. Hardig and M. P. deBlumenthal — What it takes to adapt caliper disc brakes to American cars ..... June 33
VASTA, JOHN — Ivo Floriti and Alan Starr — BUSHIPS finds 4 materials promising for hydrofoils ..... May 90
VERSACE, JOHN — Bruce D. Van Deusen — Alfred D. Bosley and Herbert J. Bauer — There is some ground among ride improvement researchers . . . but there are plenty of differences too ..... June 68
VINCENT, E. T. — Charts help map performance of turbocharged CI engines ..... Dec 66
VOS, GEORGE B. — Detergent cleaning best for thin film removal, tests show ..... Dec 91

W

WAGNER, J. F. — R. L. McCafferty and W. A. P. Meyer — Antiknock performance clocked on turbocharged engines of Corvair and Oldsmobile ..... Aug 92
WALKER, D. R. — Picked particles preferred . . . high-speed fluid contamination checks hinge on calibrating instruments to standard contaminants ..... Oct 82
WALLACE, D. G. — M. J. Durella — J. R. Kelley and N. J. Musil — Look for trouble when engine parts get too hot ... Ap 93
WALLACE, J. F. and D. K. Wright — Design rather than discontinuities determine steel casting performance ..... June 56
WALTHER, W. D. — Design and chemistry lift brake performance ..... Fe 73
WATSON, J. F. and J. L. Christian — Soft solders rated for cryogenic service ..... Mr 80
WEBER, F. and M. C. Steele — Precise speed control system demonstrated for recuperated gas turbine engine .... Nov 78
WEBER, HOWARD W. — Reliable ignition needs trouble-free transistors ..... Oct 41
WEINRICH, CHARLES and Donald Zook — Know your loads farm and construction equipment are subject to a variety of unforeseen loads that affect fatigue life .... May 52
WEISINGER, M. D. — LASER fabricates space-age materials Fe 56
WEITZLER, IRVING M. — Joseph W. Beaudet and Irving Tarlow — Army's sandpiper fork lift truck ..... Ap 36
WELCH, H. C. — Solid-state solutions to ignition problems . Oct 95
WELTMAN, W. C., JR., — Aluminum trim resists corrosion June 109
WENDL, M. J. — W. J. Luedde — R. P. Gillooly and J. Zaborsky — Computer filters feedback for better booster control ..... Oct 49
WERNATH, KARL O. — E. J. Manganiello — Cecil C. Tyrrell and D. E. Irwin — Excellent individual achievement is key to progress ..... July 30
WERNER, CALVIN J. — Definition + Discipline = decision that makes sense ..... Oct 28
WEST, H. E. — Rolls-Royce investigates longer life igniters for jets ..... July 120
WESTENBERG, H. E., and Sieling, C. — Agri-Robot — The automated plow ..... Se 36
WESTERWICK, R. A. — 6–10 gyroscompasses needed for control of big missiles ..... May 84
WHELAN, R. W. — Reversible reduction gear for multiple marine diesels ..... Jan 102
WHITAKER, R. A. — Reinforced plastics — fabrication .... May 28
WHITE, R. P. and A. R. Trenka — What makes a jet-flap helicopter rotor stable ..... Ap 50
WHITE, RICHARD P. and Rodney D. Hardy — Army tracked vehicle expands multipurpose concept ..... Ap 65
WHITE, W. H. and R. B. Gangnath — Optimum hydraulic accumulator design includes real gas effects ..... Aug 68
WIENKE, H. J., George D. Ebersole, P. S. Myers, O. A. Uyehara — Two tools to help deisel engines beat the heat Sept 49
WILCOX, B. W. — PERT keeps management informed ..... Ap 26
WILKS, C. R. — J. W. McCown and L. J. Gagola — Braze alloys evaluated for refractory metal sandwich structures July 137
WILLIAMS, JR., H. A., A. V. Cabal, and A. E. Felt — Leaded LP-gas gives high knock-limited power in recent lab tests ..... Nov 103
WILLIAMS, L. A. and W. B. Kleiner — Electrochemical machining — when and how to use it ..... July 94
WILLIAMS, S. F. and A. O. Elkins — Powered-axle concept gives Army mobile, multipurpose vehicles ..... May 90
WILLIAMS, WILLIAM E. — New metal-plastic laminate promises cheaper, lighter body panels ..... Nov 98
WILLSON, P. J. and D. M. Teague — Distributor caps evaluated by easy test ..... June 65
WINGE, J. L. — R. H. Vansteenkiste — E. J. Hardig and M. P. DeBlumenthal — what it takes to adapt caliper disc brakes to American cars ..... June 33
WIRTA, R. W., John Conley, J. L. De Weese, G. L. MacPherson, R. S. Mosher, and Richard H. Sprince — CAMS concept integrates man and machine ..... Nov 65
WITZKY, JULIUS E. — Development of Witzky pumpless injection ..... Oct 54
WOELFFER, N. C. and V. R. Kaufman — How to lower oil-to-fuel ratio and lift performance of two-stroke engines .. Aug 78
WOLF, L. C. — D. R. Olberts and J. A. Graham — Fatigue calculations made easy ..... Oct 60
WOOD, C. C. — G. K. Platt — M. E. Nein and J. L. Vaniman — Propellant feed system optimization depends on choice of (1) LOX tank location; (2) bulkhead configuration ..... Aug 64
WOOD, H. J. and E. H. Benstein — Radial turbine efficiency can equal axial turbine efficiency ..... July 93
WOOD, K. E. — Shifting natural frequency cuts torque fluctuations in tractor-implement systems ..... Dec 87
WRIGHT, D. K. and J. F. Wallace — Design rather than discontinuities determine steel casting performance ..... June 56
WRIGHT, ROBERT H. — H. Franklin Hostetler — BORON additive de-bugs diesel fuel ..... Ap 47

Y

YINGST, J. E. — Fuel injection vs carburetion — pros and cons ..... July 129
YORAN, CALVIN S. — EPR polymers warrant trial in bodies May 84
YOUNG, D. — Y. C. Fung and M. V. Barton — Parameter use simplifies analysis of non-linear response to shock ..... July 130
YOUNG, L. C. — J. S. Alford and D. P. Davies — Computers improve understanding of dynamic matching of inlet duct airflow with engine airflow for supersonic aircraft .... May 46
YOUNG, RICHARD E. — Improvement in art and materials advance filament-wound products ..... June 104
YOUNG, WARREN J. — Man-hours saved, accuracy improved by using computor to solve driveline engineering problems ..... Ap 54
YOUNGS, HOMER — Stanford research pegs future hydrofoil market ..... Nov 110
YU, M. K. — C. A. Amann and D. W. Dawson — Conflicting demands beset designer of gasifier turbines ..... Fe 67

Z

ZABORSKY, J. — R. P. Gillooly — W. J. Luedde and M. J. Wendl — Computer filters feedback for better booster control ..... Oct 49
ZOLL, A. H. and R. P. McClelland — Breakerless high-frequency ignition system developed for aircraft piston engines ..... July 74
ZOOK, DONALD and Charles Weinrich — Know your loads farm and construction equipment are subject to a variety of unforeseen loads that affect fatigue life ..... May 52
ZUMBRUN, SYLVESTER H. N. — Lunar surface vehicle and crew must become "we" for successful mission ..... May 94